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Vol. LXXII.] [Part I.

JOURNAL

OF THE ROYAL STATISTICAL SOCIETY.

MARCH, 1909.

The COST, CONDITIONS, *and* RESULTS *of* HOSPITAL RELIEF *in* LONDON.

By PERCY E. BRAUN, B.SC. (Econ.).

(HOWARD MEDAL PRIZE ESSAY.)

[Submitted to the Royal Statistical Society, Session 1907-08, and read before the Society on the 19th January, 1909, SIR EDWARD W. BRABROOK, C.B., Vice-President, in the Chair.]

HOSPITALS in London, as in the rest of England and Wales, have been founded for the most part by the beneficence of private donors, and continue to be maintained from the same source. Each separate institution, whether a great general hospital with its medical school or a small cottage hospital, is usually under the independent management of a body of trustees elected by subscribers and donors, and exempt from the jurisdiction of the Charity Commissioners or other central co-ordinating or supervisory body. Since 1897, the three Hospital Funds have succeeded in introducing considerable uniformity into the accounts of the individual institutions by requiring that the bestowal of a grant shall be conditional upon the adoption by each hospital of a uniform system of accounts which has been approved by them. Further, the King's Hospital Fund especially, by reason of its power to give considerable financial help to an institution, can suggest improvements which rarely fail to commend themselves to the hospital authorities.

Apart from the hospitals not under public control, there are the fever and small-pox hospitals of the Metropolitan Asylums Board (which belong to London but are mostly situated outside its bounds), and the infirmaries of the poor-law guardians. These publicly-managed hospitals are much less important, and loom much less largely in the public mind than those under trustee management. So true is this that there is no doubt in general speech as to the meaning of the word "hospital."

Summary of expenditure, 1906, *of*

	Provisions.		Surgery and Dispensary.		Domestic Expenses.	
	Amount.	Per Cent. of Total Maintenance Expenditure.	Amount.	Per Cent. of Total Maintenance Expenditure.	Amount.	Per Cent. of Total Maintenance Expenditure.
Administrative County of London.	£		£		£	
12 general hospitals with medical schools [a]	106,162	23·0	58,759	12·7	98,096	21·2
22 general hospitals without medical schools [b]	36,798	28·1	19,152	14·6	27,429	20·9
Special hospitals—						
12 hospitals for children [c]	14,123	21·1	8,367	12·5	17,200	25·7
3 hospitals for women and children [d]	1,993	20·9	1,881	19·7	2,027	21·2
5 hospitals for women [e]	6,222	25·9	3,697	15·4	5,733	23·9
6 lying-in hospitals [f]	8,313	29·3	1,344	4·7	6,100	21·5
4 consumption hospitals [g]	19,343	32·7	4,633	7·8	11,555	19·5
2 dental hospitals [h]	—	—	1,583	24·0	689	10·4
3 hospitals for epilepsy and paralysis [i]	5,409	26·9	2,839	14·1	3,962	19 7
2 hospitals for fistula [j]	1,369	27·2	483	9·6	1,235	24·6
5 ophthalmic hospitals [k]	4,175	22·1	2,337	12·4	3,160	16·7
5 skin hospitals [l]	804	11·4	1,363	19·2	718	10·1
5 throat, nose, and ear hospitals [m]	1,779	16·8	2,188	20·6	1,710	16·1
6 other special hospitals—						
Cancer, Brompton	3,219	24·6	1,803	13.8	3,536	27·0
London Fever Hospital	2,533	25·9	350	3·6	2,506	25·6
London Lock Hospital	2,068	32·0	803	12·4	1,443	22·4
National Hospital for the Heart	696	28·3	526	21·4	413	16·8
Royal National Orthopædic	843	26·4	288	9·0	852	26·7
St. Peter's Hospital for Stone	754	18·8	1,307	32·6	777	19·4
Total for the 58 special hospitals	73,643	24·9	35,792	12·1	63,616	21·6
Extra-London.						
31 General hospitals [n]	10,649	31·0	4,303	12·5	6,825	19·9
Grand total for the 123 hospitals	227,252	24·6	118,006	12·8	195,966	21·2

---

[a] Charing Cross, Guy's, King's College, London, Middlesex, Royal Free, St. Bartholomew's, St. George's, St. Mary's, St. Thomas', University College, and Westminster.

[b] Billingsgate Mission, Bolingbroke, French, Friedenheim, German, Great Northern Central, Hampstead General, Italian, Kensington General, London Homœopathic, London Temperance, Metropolitan, Mildmay Memorial Cottage, Mildmay Mission, Miller, National Anti-Vivisection, North-West London, Poplar, St. John's Lewisham, Seamen's, West London, and Woolwich and Plumstead Cottage.

[c] Alexandra, Belgrave, Cheyne, East London, Evelina, Great Ormond Street, Hampstead Infants', North-Eastern, Paddington Green, Sydenham, Victoria, and St. Monica's, Brondesbury, in Extra-London.

[d] Grosvenor, Royal Waterloo, and St. Mary's, Plaistow, in Extra-London.

[e] Chelsea, Harley Street, New, Samaritan, and Soho.

[f] British, City of London, Clapham Maternity, East End Mothers', General, and Queen Charlotte'

123 *hospitals in Greater London.*

Rents, Rates, Taxes, Repairs, &c.		Salaries, Wages, and Pensions.		Other.		Total Maintenance.	Management, *including* Interest on Loans.	Total Ordinary Expenditure.	Percentage of Management Expenditure, *excluding* Interest on Loans, to Total Ordinary Expenditure.	Total Extraordinary Expenditure.
Amount.	Per Cent. of Total Maintenance Expenditure.	Amount.	Per Cent. of Total Maintenance Expenditure.	Amount.	Per Cent. of Total Maintenance Expenditure.					
£		£		£		£	£	£		£
45,105	9·8	145,892	31·6	7,889	1·7	461,903	23,869	485,772	4·8	150,044
10,799	8·2	34,175	26·1	2,713	2·1	131,066	15,739	146,805	10·0	33,469
6,003	9·0	19,194	28·7	2,020	3·0	66,907	7,080	73,987	8·9	25,045
964	10·1	2,454	25·7	231	2·4	9,550	1,728	11,278	14·8	1,794
2,484	10·3	5,503	22·9	392	1·6	24,031	2,437	26,468	8·7	2,200
3,976	14·0	7,593	26·7	1,088	3·8	28,414	2,156	30,570	6·8	28,358
6,847	11·6	15,479	26·1	1,350	2·3	59,207	6,452	65,659	9·7	9,746
2,420	36·6	1,833	27·8	79	1·2	6,604	733	7,337	10·0	276
2,221	11·0	5,280	26·3	403	2·0	20,114	2,664	22,778	11·0	5,176
610	12·1	1,163	23·1	171	3·4	5,031	1,042	6,073	12·7	1,010
3,978	21·1	4,714	24·9	536	2·8	18,900	2,527	21,427	10·0	469
2,522	35·6	1,253	17·7	422	6·0	7,082	1,499	8,581	16·9	70
1,989	18·7	2,658	25·0	293	2·8	10,617	1,378	11,995	9·0	8,706
1,277	9·8	2,874	21·9	384	2·9	13,093	1,449	14,542	10·0	2,970
1,209	12·4	3,092	31·7	76	0·8	9,766	1,624	11,390	14·3	—
684	10·6	1,358	21·0	105	1·6	6,461	768	7,229	10·6	565
326	13·3	464	18·9	33	1·3	2,458	323	2,781	11·6	30
306	9·6	776	24·3	128	4·0	3,193	856	4,049	20·7	883
202	5·1	902	22·5	64	1·6	4,006	441	4,447	7·6	1,456
38,018	12·9	76,590	25·9	7,775	2·6	295,434	35,157	330,591	10·0	88,754
2,870	8·3	9,438	27·4	318	0·9	34,403	2,411	36,814	5·6	7,128
96,792	10·5	266,095	28·9	18,695	2·0	922,806	77,176	999,982	7·3	279,395

---

[g] Brompton (with its sanatorium at Frimley), City of London, Mount Vernon (with its sanatorium at Northwood), and Royal.

[h] National and Royal.

[i] Maida Vale, National, and West End.

[j] Gordon and St. Mark's.

[k] Central London, Royal Eye, Royal London, Royal Westminster, and Western.

[l] Blackfriars, London, St. John's, St. Paul's, and Western.

[m] Central London, Golden Square, London, Metropolitan, and Royal Ear.

[n] Acton, Barnet, Beckenham, Bexley, Bromley, Buckhurst Hill, Bushey Heath, Carshalton, Caterham, Cheshunt, Ealing, Enfield, Erith, Hanwell, Harrow, Hayes, Hounslow, Kingston, Leyton, Norwood, Richmond, Sidcup, Surbiton, Sutton, Teddington, Tottenham, Twickenham, Willesden, Wimbledon, Wimbledon (South), and Woodford.

Further, there are the many charitable dispensaries, the provident dispensaries, and the poor-law dispensaries. The work of these institutions unquestionably overlaps that of the out-patient departments of the hospitals. Very little statistical information is available as to them.

Hospitals under trustee management.

In the consideration of the hospital question in London, the writer has been able to examine in detail the reports and accounts, for 1906, of 90 hospitals situated within the Administrative County of London, and of 33 hospitals situated within the Registrar-General's "outer ring,"—in all, the reports and accounts of 123 hospitals roughly within a 15-mile radius of Charing Cross. These hospitals vary greatly in size and object. There are the great general hospitals with medical schools, the general hospitals without medical schools, and the special hospitals. Of the 33 hospitals in extra London, 31 are general hospitals and 2 (St. Monica's, Brondesbury, for sick children, and St. Mary's, Plaistow, for women and children) special.

These 123 hospitals do not constitute all the hospitals situated in Greater London. The writer is aware of two somewhat important omissions, viz., the West Ham General Hospital and the City Orthopædic Hospital,[1] the reports and accounts of which he has not been able to see. There may be other omissions, but he does not believe they can be many or important.

The table on pp. 2 and 3 shows in summary form the total ordinary expenditure of these hospitals on maintenance and management incurred in, not paid during, the year 1906, together with the extraordinary expenditure of the same year. The figures are derived solely from the printed reports and accounts. For convenience, the two special hospitals situated outside the county have been added to the group of special London hospitals to which they belong. The heads of expenditure are derived from the "uniform system of accounts," which nearly all the hospitals now follow. In the few instances where this is not the case, the effort has been made to bring the accounts approximately into line therewith.

Most of the heads of expenditure speak for themselves, but one or two remarks can conveniently be appended. "Domestic "expenses," the scope of which term is not obvious, includes renewal of furniture, bedding and linen, hardware, crockery, brushes, &c., washing, cleaning and chandlery, water, fuel and lighting, uniforms, &c. Malt liquors are included under "provisions," wine and spirits under "surgery and dispensary." "Salaries, wages and pensions" include only these outgoings in respect of the medical, dispensing, nursing and domestic service staff, and exclude the secretarial and official salaries, which come under "management." "Management" includes interest on loans (usually bankers' short-period advances), but a mortgage charge is included with rent under "rent, rates, "taxes, repairs, &c."

---

[1] This hospital was working as an independent institution in 1906, but has since been amalgamated with the National Orthopædic.

"Extraordinary expenditure" includes extraordinary repairs, the building of new wings and branches, the laying down of new drains, fire-extinguishing apparatus, boilers, &c., and all permanent works on fabric.

Throughout, the figures exclude, except in the few cases where it cannot be helped, expenditure upon medical schools, convalescent homes, nursing homes, and expenditure out of Samaritan funds. But the expenditure of the consumption hospitals includes the cost of the sanatoria in the country.

The figures in the above table may be taken as substantially accurate. The uniform system of accounts is prepared in such detail that, except in cases where it is obviously not followed, there is no difficulty in comparing the accounts of one hospital with another or of one group of hospitals with another group. There are deficiencies which will receive mention later: but these do not detract from the justice of the comparisons made in the above table.

Percentage of cost of management to total ordinary expenditure.

It will be noticed that the lowest figures of cost of management occur in the cases of the general hospitals with medical schools and the extra-London hospitals. In the former case it works out at 4·8 per cent. of the total ordinary expenditure, in the latter at 5·6 per cent. The lowness of these two figures would appear to be due to entirely different causes. The low figure in the case of the great general hospitals is due to the economies of large scale administration, in the case of the extra-London hospitals (mostly small cottage hospitals) it is due to the fact of the secretarial work being almost always unpaid. The cost of management is much greater in the case of the medium-sized hospitals, where the economies of large management cannot be obtained, while the hospitals are too large to dispense with a paid secretariat. The large figure for the skin hospitals (16·9) is unquestionably due to the fact that the hospitals are too small for independent management, and their amalgamation in the near future is not improbable.

When one turns to comparisons of the cost of management in individual hospitals general causes must be supplemented by particular. In the following cases the administrative charges, excluding the item "interest on loans" (an item which we cannot help feeling should not be included under "cost of management" in the uniform system),[2] exceeded 15 per cent. of the total ordinary expenditure.

	Per Cent.		Per Cent.
Blackfriars Skin	26·0	Metropolitan, Kingsland Road	17·4
Royal Waterloo for Women and Children	22·4	Alexandra, for Children	16·8
		Royal Westminster Ophthalmic	16·8
Western Skin	22·1	West End, for Epilepsy and Paralysis	16·2
Royal National Orthopædic	20·7		
St. Paul's Skin	19·6	St. John's Skin	16·2
City of London, for Chest	18·1	Kensington General	15·8

The Miller Hospital also works out at 16·8 per cent., but this is due to quite exceptional causes. For the rest, the causes of the high figures have to be sought in the detailed accounts and in other places inaccessible to the outside investigator. One notable fact is certain, that several of the above hospitals are in financial difficulties.

In the following cases the cost of management works out at less than 5 per cent. of the total ordinary expenditure. It is probable that others of the extra-London cottage hospitals would work out at less than 5 per cent., but their accounts differ too far from the uniform system to make comparison advisable.

	Per Cent.		Per Cent.
Sydenham, for Sick Children	1·3	Enfield Cottage	3·2
St. John's, Lewisham	1·6	St. Thomas'	3·3
Ealing Cottage	2·1	London	3·9
Norwood Cottage	2·1	National Anti-Vivisection	4·0
Harley Street, for Invalid Gentlewomen	2·6	Bolingbroke	4·4
		St. George's	4·7
Bromley Cottage	2·9	University College	4·8
Sutton Cottage	2·9	Clapham Maternity	4·9
St. Bartholomew's	3·2		

Note that the above list contains no hospital for the treatment of a special disease. Note, also, that the list contains five of the largest hospitals, and that nearly all the others are small hospitals.

Relative maintenance expenditure.

Considerable interest and instruction can be obtained by a study of the figures in the above table, showing the percentage of the expenditure under the several heads of maintenance to the total cost of maintenance. The figures express, in an accurate form, conclusions that might otherwise have been guessed in the rough; but they do not afford much basis for criticism, and certainly no basis for criticism upon extravagance. For, first, the figures being the averages only of groups, they tell us nothing of the extravagance or economy of working of the individual independent hospitals of which the groups consist. Secondly, one is very little wiser whether Group A is to be praised or blamed because it has spent a greater or less proportion of its total maintenance expenditure upon, say, provisions than Group B (Group A may have been extravagant all along the line and Group B economical). Thirdly, each group of hospitals, by reason of the work it carries out, needs to distribute its expenditure very differently from other groups. Fourthly, the proportion of the amounts of in- and out-patient work makes a considerable difference in the proportions of different parts of the expenditure. Bearing these limitations in mind, still there is much of interest in the figures.

---

[2] "Interest on loans" is now (in the accounts for 1907 of hospitals adopting the uniform system) removed from "administrative charges."

Note, for example, the not unexpected fact that the consumption and lying-in hospitals spend a larger proportion of their total maintenance expenditure upon provisions than any other of the groups. Note how heavily handicapped are the dental hospitals and the skin hospitals by their heavy charges for rent, rates, taxes, repairs, &c. Note how light are the surgery and dispensary charges in the consumption and lying-in hospitals and the London Fever Hospital. Note that salaries and wages are higher in the great hospitals with medical schools than in any of the others, except the London Fever Hospital.

But these criteria are, as we have said, of very little use as indicating extravagance or economy. Other bases must be selected, based upon the number of beds and patients. For this purpose we must turn to the statistics of work done.

Detailed expenditure of the 12 general hospitals with medical schools.

But before dealing with the statistics of beds and patients, it is interesting to set forth in greater detail the actual expenditure of the hospitals. For this purpose the expenditure of the 12 general hospitals with medical schools has been analysed in detail, with the following results:—

Provisions (excluding those of the nurses at Guy's Hospital).

	£
Meat	27,598
Fish, poultry, &c.	9,669
Butter, cheese, &c.	13,334
Eggs	5,177
Milk	18,041
Bread, flour, &c.	6,841
Grocery	11,124
Vegetables	5,058
Malt liquors	1,882

Surgery and dispensary.	£
Drugs, chemicals, and disinfectants	21,945
Dressings, bandages, &c.	18,443
Instruments and appliances	11,358
Ice and mineral waters	1,024
Wine and spirits	1,936
Rent, rates and taxes, insurance, &c.	
Rent	1,648
Rates and taxes	12,822
Insurance	1,512
Ordinary repairs and annual cleaning	28,187
Domestic.	
Renewal of furniture	4,700
Bedding and linen	7,592
Hardware, crockery, brushes, &c.	3,970
Washing	24,000
Cleaning and chandlery	6,007
Water	4,699
Fuel and lighting	41,641
Uniforms	3,905
Salaries and wages.	
Medical and dispensing	35,977
Nursing	44,248
Other	58,769
Pensions and gratuities	6,899

Hospital statistics.

It has been said above that the adoption of the uniform system of accounts has been of great use to investigators and others. We have here to plead to the committees of the hospital funds to use their influence (i) in making one great improvement in that system, and (ii) in introducing a uniform system of statistics.

The great improvement in the uniform system of accounts for which we plead is the separation (according to reasoned estimates which can only be made by the hospital authorities themselves) between the in-patient and out-patient accounts.[3] So much has been written upon this subject that it is not necessary to add to it here. Suffice it to say that so great an authority as Sir Henry Burdett is convinced that there are no great difficulties in the way of this being done.

But the point with which we wish to deal at some length is the question of uniformity of statistics. Much of the essential information is set forth very obscurely in many of the hospital reports, and quite unwarrantable additions and averagings are made for the sake of making the figures speak. The writer recalls one instance of an extra-London cottage hospital where some average figures were worked out, on very small data, to four places of decimals, the last figure recurring.

But this playing with the figures would be unimportant, if the real statistical facts the investigator required could be found.

---

[3] This is now done by hospitals adopting the uniform system.

Frequently, however, they cannot be found. Let us deal with certain points explicitly.

Number of beds.—Even a comparatively simple matter such as this involves difficulties. The uniform system for which I plead should show the following :—

1. Number of beds (excluding those in isolation wards) in the hospital on { 1st January. 31st December.

[If the number of beds on the 31st December differs from that on the 1st January, give the dates on which new beds became available or old beds became unavailable.]

2. Period or periods during which any (and how many) of these beds were not available for use by reason of the closing of a ward or wards for lack of funds, lack of need, repairs, &c.

3. Number of beds in the isolation wards, if any.

Number of in-patients.—The difficulty in this case is that it is frequently impossible to say whether the figure given in the reports includes or excludes the number in the hospital on 1st January. Sometimes the reports give the number admitted only, and then one has to add a figure for the sake of comparison. There should be no difficulty in this case. All that the uniform system need ask for is :—

1. Number of patients in the hospital on 1st January.

2. Number of admissions during the year, *excluding those brought in dead.*

Average daily number of beds occupied.—This figure, which is perhaps the most important that the investigator wants to use, is usually given, probably correctly, though he has no means of testing its accuracy. It is a figure which he would be glad to have to at least one, and perhaps two places of decimals. Sometimes he gets it to the nearest whole number, sometimes to several places of decimals. It is really a very simple figure to obtain. The hospital registers must show the dates of admission and departure of every in-patient. From these it is perfectly easy to calculate the number of patients on every individual day of the year, which, added together and divided by 365 or 366, as the case may be, will give the average daily number of beds occupied.

Number of out-patients.—The figures usually given for out-patients are (i) number of *new* out-patients, (ii) total number of out-patient attendances. More often than not, the number of casualties is given separately. But in regard to the casualties, it is quite certain that the meaning of the word is very differently interpreted. In some of the general hospitals, the casualties number not more than one in eight or nine of the total number of new out-patients, but in most they number more than half. A further difficulty occurs in the matter of renewals. In some cases out-patient renewals are given as a separate figure, in others they are treated as new out-patients.[4]

In the following table, which summarises the statistics of the 123 hospitals, many estimates have been made, and some figures which seemed doubtful have been made use of; but unquestionably it presents a truer picture of the work done by the hospitals than if only the certain figures had been taken.

Summary of statistics, 1906, *of* 123 *hospitals in Greater London.*

	Number of Beds.	Average Daily Number of Beds Occupied.	Total Number of In-Patients.	Number of New Out-Patients (including Renewals).	Total Number of Out-Patient Attendances.
Administrative County of London.					
12 general hospitals with medical schools	4,788	4,151	65,285	905,022	2,355,464
22 general hospitals without medical schools	1,690	1,405	20,927	389,516	980,207
Special hospitals—					
12 hospitals for children (including St. Monica's, Brondesbury)	927	821	11,693	192,967	497,710
3 hospitals for women and children (including St. Mary's, Plaistow)	171	83	1,395	33,330	128,715
5 hospitals for women	241	216	3,280	20,574	74,522
6 lying-in hospitals	231	166	4,446	14,638	34,901
4 consumption hospitals	863	737	5,125	43,223	162,880
2 dental hospitals	—	—	—	47,891	81,093
3 hospitals for epilepsy and paralysis	277	243	1,805	8,957	118,218
2 hospitals for fistula	76	62	856	2,673	7,469
5 ophthalmic hospitals	261	195	4,247	110,857	297,443
5 skin hospitals	72	28	270	20,467	86,254
5 throat, nose, and ear hospitals	104	66	2,347	28,643	138,441
6 other special hospitals, viz.:—					
Cancer	114	99	901	1,698	17,376
London Fever	198	58	644	—	—
London Lock	162	103	816	3,617	24,362
National, for the Heart	26	25	172	2,855	20,948
Royal National Orthopædic	52	51	266	2,778	9,126
St. Peter's, for Stone	32	25	450	3,885	40,867
Total for 58 special hospitals	3,807	2,978	38,713	539,053	1,740,325
Extra-London.					
31 general hospitals	662	443	7,745	37,904	124,709
Grand total	10,947	8,977	132,670	1,871,495	5,200,705

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[4] The statistics for 1907 of hospitals adopting the uniform system are much improved along the lines indicated in the letterpress.

The above table includes, as has been said, various estimates. In the tables that follow, only actual figures are made use of, those hospitals for which the figures are doubtful being altogether omitted.

Application of the statistics to the accounts.

The real task of the comparison of the accounts of one hospital with another can now be attacked, and the fundamental difficulty may be put as follows: The accounts of the hospitals are not separated in respect of in-patients and out-patients.[5] How can one compare, then, the cost, say, of surgery and dispensary charges in two hospitals in which there is no uniform proportion either between the numbers of in-patients and out-patients, or between the cost of an in-patient and an out-patient? If either of these uniform proportions existed, and we knew the proportion, the task would be an easy one. The existence of such uniform proportions has been assumed by different investigators. Thus, Sir Henry Burdett, in his invaluable year-book, works out the surgery and dispensary charges of the various hospitals upon the average number of beds occupied, thus tacitly assuming a constant proportion between the numbers of in- and out-patients, an assumption which the figures constantly contradict. In fairness, it must be added that he does this in desperation, as it were, after a full realisation of the unsatisfactoriness of what he is doing. The statistical report, issued by the King Edward's Hospital Fund for London, commits a different error, viz., that of assuming a fixed proportion (200 in the case of the general hospitals) between the surgery and dispensary costs of a fully occupied bed for one year and an out-patient. The objections to this course are two. In the first place, just as the unit "average "daily number of beds occupied" has the advantage in fairness over "number of in-patients," because it eliminates the differences of the periods of residence, so the unit "number of out-patient attend-"ances" has the advantage over "number of out-patients" (which, by the way, is nearly always "number of new out-patients," and sometimes includes, sometimes excludes, the so-called "renewals"), because it eliminates the differences of the number of attendances per out-patient. That this objection is a real one may be readily illustrated. The following figures show the average number of attendances per (new) out-patient for all the general hospitals with medical schools, and for the two largest of the hospitals in each of the other groups. The number of out-patient attendances is not given for Guy's Hospital.

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[5] This fundamental statement is no longer true of the accounts for 1907 of hospitals adopting the uniform system. Consequently, the letterpress of the three following pages loses its practical and retains historical interest only.

Charing Cross	3·2
King's College	2·5
London	2·6
Middlesex	2·4
Royal Free	2·5
St. Bartholomew's	2·3
St. George's	2·5
St. Mary's	2·7
St. Thomas	2·4
University College	3·5
Westminster	3·1
Great Northern Central	2·5
Seamen's	4·0
Gt. Ormond Street (Children)	2·8
North Eastern	2·6
Grosvenor, for Women and Children	3·9
Royal Waterloo	4·4
New, for Women	4·2
Samaritan Free	3·0
Soho	4·1
Brompton Consumption	5·0
City, for Chest	4·1

National Dental	1·4
Royal Dental	1·9
National, for Epilepsy and Paralysis	13·4
West End	12·2
Gordon, for Fistula	3·1
St. Mark's	2·6
Royal London Ophthalmic	2·7
Royal Westminster	3·1
London Skin	5·9
St. John's	5·0
Central London Throat, Nose, and Ear	4·7
Golden Square	5·0
Cancer	10·2
London Lock	6·7
National, for Heart	7·3
Royal National Orthopædic	3·3
St. Peter's, for Stone	10·5
Richmond Royal	3·9
Tottenham	3·2

But, in the second place, the writer has reason to believe that there is no justification whatever for the assumption of even approximate constancy of the proportion of expenditure on "surgery "and dispensary" as between "beds occupied" and "out-patient "attendances," even in the case of the great general hospitals. In the effort to arrive at a satisfactory basis on this head, he examined the only two cases he was able to find in which separate accounts were kept for the in-patients' and out-patients' departments. These two cases were the Hampstead General Hospital and the Mount Vernon Consumption Hospital. In the case of the Hampstead General Hospital, he found that the surgery and dispensary charges per bed occupied were equal to the same charges in respect of 915 out-patient attendances, while in the case of the Mount Vernon Hospital, the same charges per bed occupied equalled those of 122 out-patient attendances. The writer does not claim that these two cases are representative; but they play some part in making him averse from assuming, in a statistical examination, the constancy of a proportion between the in- and out-patients' "surgery and "dispensary" costs.

The method most commonly adopted for comparing the cost of one hospital with another has been to assume the cost of an out-patient (not separately for the separate items of expenditure, but as a whole), and then to subtract the estimated cost of the out-patients' department from the total ordinary expenditure, treating the remainder as the cost of the in-patients' department. A minor objection to this method lies in the fact that "out-patients" are taken, instead of "out-patient attendances." But the major objection lies in the fact that the estimated figures are very doubtfully correct. Even if they were correct as *averages* for a group, it is open to the gravest objections to assume within that group an equal rate of expenditure in the out-patients' department of each hospital, for the sake of showing the relative economy or extravagance in the in-patients' department. The objections to the method would be much less serious if the expenditure upon the out-patients' department were inconsiderable in relation to the total expenditure. But it is very considerable in respect of items in which out-patients' expenditure enters. For example, one notices in the case of Hampstead General Hospital that the expenditure upon "surgery "and dispensary" was :—In-patients, 392*l.*; out-patients, 94*l.*; in that of the Mount Vernon Hospital, in-patients, 425*l.*; out-patients, 322*l.*

The flaw in this ordinary method may be illustrated by an exaggerated analogy, in which the absurdity is apparent. It is as if one were told the areas of a hundred or so rectangular fields, and with these sole data one sat down in one's study and proceeded to compare their lengths by assuming their breadths.

The writer is satisfied that it is not possible, with the existing data, to find any satisfactory unit with which to work for the sake of comparing the total cost of one hospital with another. Nor can comparison be made in respect of any item of expenditure incurred in part both by in-patients' and out-patients' departments. But there is one item of expenditure, viz., provisions, which is incurred solely for the in-patients' department; and there is another item, viz., domestic expenses, which is incurred almost entirely for the in-patients' department. (In the case of the Hampstead General Hospital the writer found that the domestic charges per bed occupied were equal to the same charges for 13,890 out-patient attendances; in the case of the Mount Vernon Hospital they equalled those of 2,706 out-patient attendances.) It is true that there are included in these items the cost of provisions and the share of domestic charges of the nurses employed in the out-patients' departments, as well as of those employed in the in-patients' departments. But this is a very small point and must be ignored.

We proceed then to examine the cost of provisions and the domestic charges per bed occupied.

Cost of provisions per bed occupied.

The cost of provisions per bed occupied works out as follows. Two cautions must be made in regard to these and the corresponding tables relating to domestic charges per bed occupied: (i) that the provisions and domestic charges for the nurses are included with those for the patients, and the nursing staff per bed occupied varies considerably, and (ii) that the "average daily number of beds "occupied" cannot be considered as a figure that is always correctly given, especially in the smaller hospitals.

Cost of provisions per bed occupied.

General hospitals, with medical schools.

	£
Charing Cross	26·8
Guy's	23·7
King's College	29·3
London	27·2
Middlesex	25·1
Royal Free	29·7
St. Bartholomew's	23·7
St. George's	25·8
St. Mary's	23·3
St. Thomas'	25·4
University College	24·2
Westminster	27·6
Average	25·6

General hospitals, without medical schools.

	£
Bolingbroke	35·8
French	24·7
Friedenheim	27·8
German	28·3
Great Northern Central	23·6
Hampstead General	30·0
Italian	21·3
Kensington General	32·2
London Homœopathic	23·8
London Temperance	30·4
Metropolitan	28·4
Mildmay Memorial Cottage	28·4
Mildmay Mission	28·4
Miller	35·3
National Anti-Vivisection	35·0
North-West London	29·7
Poplar	29·6
St. John's, Lewisham	39·1
Seamen's	21·1
West London	20·2
Woolwich and Plumstead Cottage	37·7
Average	26·1

Special (children).

Alexandra	15·7
Belgrave	21·2
Cheyne	14·2
East London	15·5
Evelina	19·7
Great Ormond Street	19·3
North-Eastern	16·7
Paddington Green	18·3
Sydenham, for Sick Children	13·2
Victoria	18·5
St. Monica's, Brondesbury	14·2
Average	17·2

Special (women and children).

Grosvenor	22·9
Royal Waterloo	23·8
St. Mary's, Plaistow	25·6
Average	24·1

Special (women).

Chelsea	24·1
New	35·5
Samaritan Free	21·8
Soho	25·0
Average	27·0

Cost of provisions per bed occupied—Contd.

Special (lying-in).

	£
British	47·4
City of London	35·6
Clapham Maternity	63·6
East End Mothers'	31·8
General	64·1
Queen Charlotte	52·6
Average	50·1

Special (consumption).

Brompton (including Sanatorium)	26·8
City of London	26·6
Mount Vernon (including Sanatorium)	24·1
Royal, for Chest	27·9
Average	26·2

Special (epilepsy and paralysis).

Maida Vale	28·0
National	24·1
West End	14·9
Average	22·3

Special (fistula).

Gordon	25·4
St. Mark's	19·8
Average	21·9

Special (ophthalmic).

Central London	24·4
Royal Eye	26·9
Royal London	19·7
Royal Westminster	17·9
Western	26·2
Average	21·4

Special (skin).

St. John's	23·0

Special (throat, nose, and ear).

	£
Central London	20·7
Golden Square	32·0
London	22·7
Metropolitan	29·1
Royal Ear	28·9
Average	27·0

Special (other).

Cancer	32·5
London Fever	13·7
London Lock	20·1
National, for the Heart	27·8
Royal National Orthopædic	16·6
St. Peter's, for Stone	30·2

Extra London.

Acton	30·7
Beckenham	18·8
Bexley	25·2
Bromley	27·3
Buckhurst Hill	24·8
Bushey Heath	21·1
Carshalton	40·0
Caterham	22·9
Cheshunt	33·5
Ealing	25·5
Enfield	16·2
Erith	33·8
Hanwell	36·7
Harrow	25·9
Hayes	37·3
Hounslow	18·1
Kingston	26·1
Norwood	16·4
Richmond	24·5
Sidcup	34·1
Surbiton	36·2
Sutton	26·7
Tottenham	21·5
Twickenham	30·1
Willesden	21·7
Wimbledon Cottage	24·7
Wimbledon, South	26·0
Woodford	21·1

The following table shows in detail the cost of provisions per bed occupied in the general hospitals with medical schools. Guy's Hospital has to be omitted, because, therein, the detailed cost of provisions is not given for the nursing staff:—

	Meat.	Fish, Poultry, &c.	Butter, Cheese, &c.	Eggs.	Milk.	Bread, Flour, &c.	Grocery.	Vegetables.	Malt Liquors.
	£	£	£	£	£	£	£	£	£
Charing Cross	7·42	2·42	4·07	0·97	4·05	2·38	2·93	1·83	0·45
King's College	7·64	2·69	5·00	1·32	5·85	1·80	3·12	1·49	0·36
London	5·74	2·62	4·00	1·76	5·22	1·58	3·17	1·04	0·61
Middlesex	7·35	2·17	3·84	1·26	3·94	1·66	2·86	1·43	0·58
Royal Free	7·78	3·69	4·13	1·96	5·48	1·67	3·24	1·48	0·30
St. Bartholomew's	7·12	2·50	2·16	1·97	4·32	1·92	2·56	1·03	0·13
St. George's	7·24	1·97	3·68	1·32	4·42	1·89	3·01	1·34	0·84
St. Mary's	6·20	2·30	4·03	0·93	3·87	1·75	2·40	1·37	0·46
St. Thomas'	8·64	2·06	2·90	0·75	4·58	1·57	3·06	1·27	0·54
University College	6·72	2·61	3·89	0·82	3·68	1·54	2·84	1·79	0·33
Westminster	9·64	2·24	3·42	0·31	3·75	1·70	2·79	2·02	1·28
Average	7·15	2·43	3·56	1·34	4·54	1·73	2·92	1·33	0·51

Domestic charges per bed occupied.

The domestic charges per bed occupied work out as follows :—

General hospitals, with medical schools.

	£
Charing Cross	28·2
Guy's	19·0
King's College	25·0
London	22·5
Middlesex	23·2
Royal Free	21·0
St. Bartholomew's	21·9
St. George's	24·9
St. Mary's	18·3
St. Thomas'	32·6
University College	28·5
Westminster	20·0
Average	23·6

General hospitals, without medical schools.

	£
Bolingbroke	25·0
French	14·4
Friedenheim	21·7
German	10·2
Great Northern Central	23·2
Hampstead General	20·9
Italian	12·1
Kensington General	22·9
London Homœopathic	20·1
London Temperance	24·5
Metropolitan	23·9
Mildmay Memorial	19·4
Mildmay Mission	23·4
Miller	36·8
National Anti-Vivisection	27·8
North-West London	15·2
Poplar, for Accidents	19·5
St. John's, Lewisham	22·2
Seamen's	17·3
West London	18·8
Woolwich and Plumstead	14·2
Average	19·5

Special (children).

	£
Alexandra	15·0
Belgrave	34·6
Cheyne	12·5
East London	19·7
Evelina	22·2
Great Ormond Street	24·2
North-Eastern	22·2
Paddington Green	21·3
Sydenham	10·0
Victoria	26·2
St. Monica's, Brondesbury	15·1
Average	21·0

Special (women and children).

	£
Grosvenor	19·3
Royal Waterloo	29·7
St. Mary's, Plaistow	25·9
Average	24·5

Special (women).

	£
Chelsea	25·4
New	29·8
Samaritan Free	24·4
Soho	24·6
Average	26·2

Special (lying-in).

	£
British	29·0
City of London	23·8
Clapham Maternity	18·6
East End Mothers'	27·5
General	51·8
Queen Charlotte	46·8
Average	36·8

Special (consumption).

	£
Brompton (including Sanatorium)	15·0
City, for Chest	14·5
Mount Vernon (including Sanatorium)	15·7
Royal, for Chest	23·9
Average	15·7

Domestic charges per bed occupied—Contd.

Special (epilepsy and paralysis).

	£
Maida Vale	17·1
National	18·9
West End	9·8
Average	16·3

Special (fistula).

Gordon	15·3
St. Mark's	22·6
Average	19·8

Special (ophthalmic).

Central London	17·0
Royal Eye	20·8
Royal London	15·3
Royal Westminster	14·1
Western	16·7
Average	16·2

Special (skin).

St. John's	21·4

Special (throat, nose, and ear).

Central London	24·2
Golden Square	35·1
London	20·0
Metropolitan	21·4
Royal Ear	20·0
Average	25·9

Special (other).

	£
Cancer	35·7
London Fever	43·2
London Lock	14·0
National, for the Heart	16·5
Royal National Orthopædic	16·7
St. Peter's, for Stone	31·1

Extra London.

Acton	20·8
Beckenham	13·1
Bexley	16·0
Bromley	18·5
Buckhurst Hill	4·3
Bushey Heath	12·5
Carshalton	28·2
Caterham	8·8
Cheshunt	21·6
Ealing	18·1
Enfield	11·5
Erith	20·2
Hanwell	15·3
Harrow	16·4
Hayes	32·0
Hounslow	9·3
Kingston	15·9
Norwood	12·2
Richmond	19·8
Sidcup	16·9
Surbiton	8·2
Sutton	22·5
Tottenham	16·4
Twickenham	19·5
Willesden	16·1
Wimbledon Cottage	14·6
Wimbledon, South	13·0
Woodford	16·3

The following table shows in detail the domestic charges per bed occupied in the general hospitals with medical schools (including Guy's):—

	Renewal of Furniture.	Bedding and Linen.	Hardware, Crockery, Brushes, &c.	Washing.	Cleaning and Chandlery.	Water.	Fuel and Lighting.	Uniforms.
	£	£	£	£	£	£	£	£
Charing Cross	0·24	0·22	1·01	6·62	2·38	1·72	14·67	0·82
Guy's	1·19	1·43	1·13	5·76	1·82	0·27	6·32	0·89
King's College	1·13	2·58	0·67	7·42	1·44	1·16	8·35	1·68
London	1·39	2·00	0·76	6·58	1·15	0·55	8·00	1·05
Middlesex	0·59	1·06	0·99	6·55	1·64	0·41	10·88	0·89
Royal Free	0·32	0·98	0·69	2·28	1·87	1·20	12·38	1·21
St. Bartholomew's	2·02	2·31	1·06	4·66	1·20	1·30	7·71	1·27
St. George's	1·41	1·85	0·85	7·31	1·45	1·28	9·34	1·19
St. Mary's	0·87	1·33	0·83	2·40	1·18	1·26	9·46	0·75
St. Thomas'	0·83	2·19	1·11	7·17	0·99	2·40	17·52	0·30
University College	0·57	2·61	1·20	5·09	2·49	2·37	13·06	0·93
Westminster	0·94	2·08	1·05	4·17	1·13	0·85	9·38	0·31
Average	1·13	1·83	0·96	5·78	1·45	1·13	10·04	0·94

Hospital income.

But the cost of hospitals, from the point of view of the public, is not the amount spent in provisions, drugs, &c., but the amount it gives them as donor or subscriber, and the amount it pays as patient. The following table shows the total ordinary income of the 123 hospitals, analysed under five heads, with the percentage of each head to the total. It should be noted that ordinary donations and the proceeds of boxes are included under "other," instead of being added, as is frequently done, to "subscriptions. The object of this departure was to bring together the income which might be said to have fixity or reliability. "Annual subscriptions," as a source of income, are of course much less reliable than "income "from invested property," but they still have a reliability that donations and boxes lack. "The Funds," of course, means the King's, the Metropolitan Sunday, and the Hospital Saturday Funds. The heading "other" also includes nurses' and probationers' fees—an item which is occasionally (*e.g.*, in the lying-in hospitals) very considerable.

Name of Hospital.	Invested Property.	Per-centage to Total Ordinary Income.	Annual Sub-scriptions.	Per-centage to Total Ordinary Income.	The Funds.	Per-centage to Total Ordinary Income.	Patients' Payments.	Per-centage to Total Ordinary Income.	Other.	Per-centage to Total Ordinary Income.	Total.
General, with medical schools.	£		£		£		£		£		£
Charing Cross	2,569	16·2	2,505	15·8	4,260	26·9	—	—	6,520	41·1	15,854
Guy's	36,279	61·2	3,841	6·5	10,010	16·9	4,662	7·8	4,497	7·6	59,289
King's College	4,677	29·1	2,081	12·9	3,220	20·0	25	0·2	6,079	37·8	16,082
London	15,868	20·8	16,102	21·0	14,985	19·6	1,979	2·6	27,576	36·0	76,510
Middlesex	7,156	30·1	3,674	15·4	5,930	24·9	—	—	7,051	29·6	23,811
Royal Free	1,237	14·0	1,417	16·1	4,159	47·2	—	—	2,005	22·7	8,818
St. Bartholomew's	69,179	96·0	—	—	—	—	—	—	2,872	4·0	72,051
St. George's	13,629	52·1	4,897	18·7	4,228	16·1	—	—	3,431	13·1	26,185
St. Mary's	1,833	10·9	5,018	29·9	6,314	37·6	149	0·9	3,479	20·7	16,793
St. Thomas'	48,131	93·3	858	1·7	180	0·3	422	0·8	1,997	3·9	51,588
University College	3,592	25·6	2,227	15·8	4,316	30·7	51	0·4	3,863	27·5	14,049
Westminster	3,462	27·8	1,534	12·3	4,707	37·8	—	—	2,759	22·1	12,462
Total	207,612	52·8	44,154	11·2	62,309	15·8	7,288	1·9	72,129	18·3	393,492
General, without medical schools.											
Billingsgate Mission	—	—	202	18·4	67	6·1	86	7·8	745	67·7	1,100
Bolingbroke	258	6·6	468	11·9	512	13·1	711	18·1	1,972	50·3	3,921
French	790	13·4	1,084	18·4	684	11·6	—	—	3,339	56·6	5,897
Friedenheim	177	4·1	1,155	26·8	390	9·0	173	4·0	2,416	56·1	4,311
German	2,925	27·1	1,568	14·6	973	9·0	490	4·5	4,822	44·8	10,778
Great Northern Central	1,198	10·7	1,951	17·4	2,832	25·2	732	6·5	4,509	40·2	11,222
Hampstead	37	0·8	1,019	20·8	333	6·8	407	8·3	3,108	63·3	4,904
Italian	333	10·4	450	14·0	808	25·1	—	—	1,622	50·5	3,213
Kensington General	6	0·4	214	12·4	246	14·3	78	4·5	1,177	68·4	1,721
London Homœopathic	2,810	34·7	2,192	27·1	1,137	14·0	1,076	13·3	881	10·9	8,096
London Temperance	1,813	23·0	1,307	16·6	1,413	17·9	289	3·7	3,063	38·8	7,885
Metropolitan	547	4·1	1,118	8·3	3,330	24·8	8	0·0	8,436	62·8	13,439
Mildmay Memorial	926	68·1	145*	10·7	89	6·5	82	6·0	118	8·7	1,360

* Including donations, excluding boxes.

Name of Hospital.	Invested Property.	Per-centage to Total Ordinary Income.	Annual Sub-scriptions.	Per-centage to Total Ordinary Income.	The Funds.	Per-centage to Total Ordinary Income.	Patients' Payments.	Per-centage to Total Ordinary Income.	Other.	Per-centage to Total Ordinary Income.	Total.
General, without medical schools—Contd.	£		£		£		£		£		£
Mildmay Mission	307	13·9	389*	17·6	696	31·5	161	7·3	658	29·7	2,211
Miller	440	11·7	1,358	36·1	1,123	29·8	—	—	842	22·4	3,763
National Anti-vivisection	86	3·7	565	24·6	—	—	514	22·4	1,135	49·3	2,300
North-West London	207	6·5	754	23·9	1,069	33·8	119	3·8	1,009	32·0	3,158
Poplar	1,706	15·7	3,185	29·4	1,241	11·4	262	2·4	4,450	41·1	10 844
St. John's, Lewisham	3	0·1	466	21·9	270	12·7	401	18·8	992	46·5	2,132
Seamen's	3,363	20·8	3,844	23·8	2,677	16·6	1,146	7·1	5,115	31·7	16,145
West London	384	4·6	2,568	31·1	2,800	33·8	—	—	2,526	30·5	8,278
Woolwich and Plumstead	20	3·8	155	29·3	103	19·5	82	15·5	169	31·9	529
Total	18,336	14·4	26,157	20·6	22,793	17·9	6,817	5·4	53,104	41·7	127,207
Special hospitals (children).											
Alexandra	332	6·7	1,437	29·0	994	20·1	601	12·1	1,587	32·1	4,951
Belgrave	66	1·4	481	10·1	1,483	31·1	—	—	2,733	57·4	4,763
Cheyne	999	31·6	1,247	39·4	350	11·1	258	8·1	311	9·8	3,165
East London	1,127	11·9	2,044	21·6	1,853	19·6	—	—	4,432	46·9	9,456
Evelina	4,038	69·5	756	13·0	398	6·8	146	2·5	475	8·2	5,813
Great Ormond Street	5,020	27·9	3,135	17·4	2,794	15·5	—	—	7,038	39·2	17,987
Hampstead Infants'	—	—	305	20·5	25	1·7	—	—	1,154	77·8	1,484
North Eastern	222	2·5	2,305	25·7	1,788	20·0	693	7·7	3,955	44·1	8,963
Paddington Green	284	7·7	1,180	31·9	713	19·3	384	10·4	1,136	30·7	3,697
Sydenham	219	12·1	711	39·5	307	17·0	346	19·2	220	12·2	1,803
Victoria	311	4·3	2,864	39·7	1,809	25·1	174	2·4	2,055	28·5	7,213
St. Monica's, Brondesbury	87	6·5	233	17·5	200	15·1	279	21·0	530	39·9	1,329
Total	12,705	18·0	16,698	23·6	12,714	18·0	2,881	4·1	25,626	36·3	70,624

* Including donations, excluding boxes.

Name of Hospital.	Invested Property.	Percentage to Total Ordinary Income.	Annual Subscriptions.	Percentage to Total Ordinary Income.	The Funds.	Percentage to Total Ordinary Income.	Patients' Payments.	Percentage to Total Ordinary Income.	Other.	Percentage to Total Ordinary Income.	Total.
Special (women and children).	£		£		£		£		£		£
Grosvenor	130	4·1	758	23·9	446	14·0	758	23·9	1,082	34·1	3,174
Royal Waterloo	404	7·8	1,365	26·3	626	12·1	297	5·7	2,494	48·1	5,186
St. Mary's, Plaistow	159	3·9	985	24·4	874	21·6	215	5·3	1,813	44·8	4,046
Total	693	5·6	3,108	25·1	1,946	15·7	1,270	10·2	5,389	43·4	12,406
Special (women).											
Chelsea	99	2·5	1,599	40·4	821	20·8	827	20·9	608	15·4	3,954
Harley Street	132	5·4	520	21·1	294	11·9	1,287	52·3	228	9·3	2,461
New	572	9·4	1,016	16·8	848	14·0	1,624	26·8	1,999	33·0	6,059
Samaritan Free	380	8·4	1,312	29·1	1,065	23·7	—	—	1,745	38·8	4,502
Soho	190	3·7	1,391	27·2	1,552	30·4	1,027	20·1	951	18·6	5,111
Total	1,373	6·2	5,838	26·4	4,580	20·7	4,765	21·6	5,531	25·1	22,087
Special (lying-in).											
British	467	14·8	339	10·8	420	13·3	83	2·6	1,844	58·5	3,153
City of London	1,723	30·0	316	5·5	1,235	21·5	—	—	2,466	43·0	5,740
Clapham Maternity	3	0·1	314*	12·1	154	5·9	1,080	41·6	1,046	40·3	2,597
East End Mothers	39	1·7	627	27·0	427	18·4	71	3·0	1,161	49·9	2,325
General, Lambeth	1,046	19·7	548	10·3	228	4·3	—	—	3,491	65·7	5,313
Queen Charlotte	946	7·7	2,249	18·4	1,113	9·1	—	—	7,948	64·8	12,256
Total	4,224	13·5	4,393	14·0	3,577	11·4	1,234	3·9	17,956	57·2	31,384

* Including some donations.

Name of Hospital.	Invested Property.	Per-centage to Total Ordinary Income.	Annual Sub-scriptions.	Per-centage to Total Ordinary Income.	The Funds.	Per-centage to Total Ordinary Income.	Patients' Payments.	Per-centage to Total Ordinary Income.	Other.	Per-centage to Total Ordinary Income.	Total.
Special (consumption).	£		£		£		£		£		£
Brompton	2,534	14·6	7,165	42·1	5,124	29·6	—	—	2,056	13·7	16,879
Sanatorium (Frimley)	—		132		—		—		313		445
City of London	269	2·5	3,039	28·0	3,772	31·8	—	—	3,768	34·7	10,848
Mount Vernon	121	1·0	3,079	24·8	1,513	12·2	—	—	7,695	62·0	12,408
Sanatorium (Northwood)											
Royal	230	4·6	2,210	44·3	1,146	23·0	—	—	1,405	28·1	4,991
Total	3,154	6·9	15,625	34·3	11,555	25·4	—	—	15,237	33·4	45,571
Special (dental).											
National	—	—	252	11·3	65	2·9	1,348	60·6	561	25·2	2,226
Royal	—	—	1,976	45·5	866	20·0	192	4·4	1,307	30·1	4,341
Total	—	—	2,228	33·9	931	14·2	1,540	23·4	1,868	28·5	6,567
Special (epilepsy and paralysis).											
Maida Vale	115	5·6	313	15·3	651	31·9	599	29·4	363	17·8	2,041
National	1,616	14·1	1,505	13·1	3,104	27·0	2,605	22·7	2,650	23·1	11,480
West End	—	—	2,917	65·9	544	12·3	364	8·2	603	13·6	4,428
Total	1,731	9·6	4,735	26·4	4,299	24·0	3,568	19·9	3,616	20·1	17,949
Special (fistula).											
Gordon	11	0·5	163	6·7	74	3·0	1,513	62·2	670	27·6	2,431
St. Mark's	611	14·8	660	15·9	459	11·1	181	4·4	2,225	53·8	4,136
Total	622	9·5	823	12·5	533	8·1	1,694	25·8	2,895	44·1	6,567

Name of Hospital.	Invested Property.	Per-centage to Total Ordinary Income.	Annual Sub-scriptions.	Per-centage to Total Ordinary Income.	The Funds.	Per-centage to Total Ordinary Income.	Patients' Payments.	Per-centage to Total Ordinary Income.	Other.	Per-centage to Total Ordinary Income.	Total.
	£		£		£		£		£		£
Special (ophthalmic).											
Central	30	1·6	395	20·5	223	11·6	—	—	1,277	66·3	1,925
Royal Eye	239	9·5	628	24·8	765	30·3	625	24·7	271	10·7	2,528
Royal London	917	7·6	1,847	15·2	6,290	51·9	—	—	3,068	25·3	12,122
Royal Westminster	852	28·3	780	25·9	329	10·9	—	—	1,049	34·9	3,010
Western	149	14·7	180	17·7	261	25·7	276	27·1	150	14·8	1,016
Total	2,187	10·6	3,830	18·6	7,868	38·2	901	4·4	5,815	28·2	20,601
Special (skin).											
Blackfriars	231	16·6	197	14·1	170	12·2	676	48·4	122	8·7	1,396
London	5	0·5	91	8·7	45	4·3	835	80·1	67	6·4	1,043
St. John's	—	—	947	21·2	311	7·0	2,315	51·8	892	20·0	4,465
St. Paul's	—	—	56	9·8	23	4·0	400	70·1	92	16·1	571
Western	60	12·5	60	12·5	18	3·8	178	37·3	162	33·9	478
Total	296	3·7	1,351	17·0	567	7·1	4,404	55·4	1,335	16·8	7,953
Special (throat, nose, and ear).											
Central London	—	—	298	10·8	276	10·0	1,969	71·3	217	7·9	2,760
Golden Square	24	0·4	404	7·0	28	0·5	4,210	73·3	1,079	18·8	5,745
London	—	—	139	9·8	114	8·1	1,043	73·8	117	8·3	1,413
Metropolitan	—	—	115	10·1	175	15·4	599	52·6	249	21·9	1,138
Royal Ear	70	4·4	160	10·2	159	10·1	755	47·9	431	27·4	1,575
Total	94	0·7	1,116	8·8	752	6·0	8,576	67·9	2,093	16·6	12,631

Name of Hospital.	Invested Property.	Percentage to Total Ordinary Income.	Annual Subscriptions.	Percentage to Total Ordinary Income.	The Funds.	Percentage to Total Ordinary Income.	Patients' Payments.	Percentage to Total Ordinary Income.	Other.	Percentage to Total Ordinary Income.	Total.
Special (miscellaneous).	£		£		£		£		£		£
Cancer	5,009	55·6	2,135	23·7	182	2·0	—	—	1,687	18·7	9,013
London Fever	1,477	16·7	4,483	50·8	358	4·1	1,726	19·6	773	8·8	8,817
London Lock	33	0·5	875	13·6	783	12·2	3,919	60·9	823	12·8	6,433
National, for the Heart	110	5·1	826	38·4	307	14·3	726	33·7	184	8·5	2,153
Royal National Orthopædic	1,928	31·5	821	13·4	1,790	29·2	667	10·9	923	15·0	6,129
St. Peter's, for Stone	325	8·8	1,011*	27·4	185	5·0	2,113	57·4	50	1·4	3,684
Total, all special	35,961	12·4	69,896	24·0	52,927	18·2	39,984	13·8	91,801	31·6	290,569
Total, London	261,909	32·3	140,207	17·3	138,029	17·0	54,089	6·7	217,034	26·7	811,268
Extra-London.											
Acton	35	2·8	502	39·6	126	9·9	45	3·5	560	44·2	1,268
Barnet	156	14·1	472	42·7	—	—	109	9·9	368	33·3	1,105
Beckenham	—	—	479	41·6	100	8·7	233	20·3	338	29·4	1,150
Bexley	37	3·5	184	17·4	63	5·9	99	9·4	674	63·8	1,057
Bromley	273	15·9	696	40·4	117	6·8	127	7·4	507	29·5	1,720
Buckhurst Hill	21	5·6	179	47·5	—	—	75	19·9	102	27·0	377
Bushey Heath	44	5·6	309	39·3	35	4·4	226	28·8	172	21·9	786
Carshalton	42	5·8	325	45·0	—	—	68	9·4	287	39·8	722
Caterham	43	6·4	195	28·9	—	—	170	25·2	267	39·5	675
Cheshunt	78	18·5	134	31·8	—	—	28	6·7	181	43·0	421
Ealing	8	0·4	581	28·5	—	—	176	8·6	1,276	62·5	2,041
Enfield	34	4·9	255	36·8	90	13·0	1	0·1	313	45·2	693

* Including donations, excluding boxes.

Name of Hospital.	Invested Property.	Percentage to Total Ordinary Income.	Annual Subscriptions.	Percentage to Total Ordinary Income.	The Funds.	Percentage to Total Ordinary Income.	Patients' Payments.	Percentage to Total Ordinary Income.	Other.	Percentage to Total Ordinary Income.	Total.
Extra-London—Contd.	£		£		£		£		£		£
Erith	151	32·8	229*	49·8	—	—	28	6·1	52	11·3	460
Hanwell	1	0·3	190*	58·8	10	3·1	41	12·7	81	25·1	323
Harrow	80	13·3	270*	45·0	—	—	97	16·1	154	25·6	601
Hayes	17	9·4	72	39·8	—	—	7	3·9	85	46·9	181
Hounslow	177	24·1	114	15·5	30	4·1	64	8·7	349	47·6	734
Kingston	38	4·5	342	40·9	66	7·9	123	14·7	267	32·0	836
Leyton	171	10·8	484	30·6	204	12·9	—	—	724	45·7	1,583
Norwood	272	24·7	387	35·1	50	4·5	223	20·2	171	15·5	1,103
Richmond	377	10·7	1,035	29·3	279	7·9	—	—	1,839	52·1	3,530
Sidcup	13	1·9	197	29·4	37	5·5	174	25·9	250	37·3	671
Surbiton	97	10·5	451	48·8	—	—	94	10·2	282	30·5	924
Sutton	27	4·4	318	51·5	—	—	38	6·2	234	37·9	617
Teddington	71	7·5	458*	48·2	10	1·0	19	2·0	392	41·3	950
Tottenham	68	1·1	1,217	20·5	2,544	42·9	—	—	2,108	35·5	5,937
Twickenham	457	41·1	285	25·6	10	0·9	20	1·8	340	30·6	1,112
Willesden	34	1·9	591	33·7	163	9·3	127	7·3	836	47·8	1,751
Wimbledon	44	5·9	325	43·3	71	9·4	150	20·0	161	21·4	751
„ (South)	—	—	140	20·6	68	10·0	127	18·7	315	50·7	680
Woodford	314	39·6	208	26·2	—	—	138	17·4	133	16·8	793
Total, extra-London	3,180	8·9	11,624	32·7	4,073	11·5	2,827	7·9	13,848	39·0	35,552
Total, Greater London	265,089	31·3	151,831	17·9	142,102	16·8	56,916	6·7	230,882	27·3	846,820

* Including donations.

The above table abounds in interest. Note, for example, the astounding differences between the percentages of income from invested property both within groups and between groups. Note the extent of the support given to some of the hospitals by the funds. Note how greatly some of the hospitals have to rely upon the fluctuating and uncertain source "donations and boxes" (which constitutes nearly the whole of "other").

Patients' payments and classes of beneficiaries.

Great diversity is shown both within and between the groups in respect of the percentage of income derived from patients' payments. One notices that the averages of groups range from 67·9 per cent. and 55·4 per cent. in the cases of the throat, nose and ear hospitals and the skin hospitals, respectively, to 3·9 per cent. and 1·9 per cent. in the cases of the lying-in hospitals and the general hospitals with medical schools respectively. Within the groups one notices great diversity, too. In the great hospitals with medical schools, the income from patients' payments is of importance only in the cases of Guy's and the London Hospitals. In the case of the two dental hospitals, the difference between the two is very remarkable: one cannot but feel doubtful whether the line is not of the thinnest that divides patients' payments at the National from donations at the Royal. The case of the two fistula hospitals raises the same question. Nominally, the Gordon raises 62·2 per cent. of its income from patients' payments, the St. Mark's only 4·4 per cent.; from donations, the Gordon raises 14·2 per cent. of its income, St. Mark's 52·8 per cent.

This question of patients' payments is very difficult to grapple with, because of the great diversity in practice. Also, it is of the utmost importance, because it raises in an acute form most of the criticisms that can be made upon the part that hospitals play in London life. Dealing merely with the curative and alleviative side of their work (as apart from the training and educative side), it may be said that the hospitals carry out a work which competes at different points with that of specialists, the ordinary practitioners, the provident dispensaries, and the poor law dispensaries and infirmaries. The following passage from "The Times" New Year article on "The legal poor of London" is interesting in this connection:—

"Another point which requires grave consideration in any
" contemplated reform is the operation of the out-patient system in
" our London hospitals. It is a well-known fact that where
relieving officers have for justifiable reasons refused to give out-
door medical orders, the applicants have gone to the out-patient

"department of a hospital and got all they wanted. Thus even "when efforts have been made by the poor law authority to induce "people to provide for themselves they have been rendered of no "avail. . . . It is not a question of obtaining better attendance "at the hospital. The out-patients' departments are so crowded "that it is impossible for a person to obtain individual attention or "for the authorities to make adequate inquiries for the purpose of "testing the ability of applicants to pay for medical attendance. "It is estimated that over two millions of people are treated as out-"patients at the hospitals in the year. The mass of applicants is "made up of the deserving and the undeserving, the latter having "as good a chance of consideration as the former, if not a better "chance, on account of their methods of action. . . . The "indiscriminate admission to hospital benefits tempts many who "could pay for medical relief to become occasional recipients of "charity, and by degrees habitual paupers. . . . Measures "ought to be taken to get rid of the charge that they [the hospitals] "have 'done more to demoralise the community and to increase "the number chargeable to the poor law than any other institution "existing.'"

Note the words in which the regulations of Guy's Hospital express the scope of its work :—

"The hospital is intended for the benefit of those who, not "being in receipt of poor-law relief, are unable to pay adequately "for the services of qualified practitioners, or who, having paid "according to their means for medical treatment, are desirous of "further advice, or who bring with them a note from their regular "doctor recommending them to the hospital. Contributors are "therefore earnestly invited to co-operate with the Governors in "repressing any abuse of the hospital by refusing letters of recom-"mendation to those who do not fall under the above categories. "The out-patient visitor investigates cases of suspected abuse of "the charity."

Most of the hospitals have a theory as to the class which they are constituted to benefit; few of them can have much confidence that practice conforms thereto. This is well exemplified by the reports of the out-patient inquiry-officers employed at a few of the larger hospitals.

Conclusion.

This essay has not been written, nor the tables prepared, to prove a thesis. The writer started without prepossessions, and has been led to various small conclusions. At every point he has found himself baffled by the meagreness of information, by the diversity of practice or by the lack of a standard of comparison. One point emerges very clearly, viz., the numerical greatness of the work done by the hospitals. So great are the figures of patients treated (130,000 in-patients, nearly 2,000,000 out-patients during one year of working), that other feelings are swamped in the realisation of the physical degradation and incapacity implied by them. Add to these patients the 30,000 dealt with by the Metropolitan Asylums Board, the unknown number of infirm and sick dealt with by the poor law guardians during the year (on the 10th February, 1906, there were 13,500 persons in the poor law infirmaries; on the 1st January, 1906, 30,000 persons were in receipt of out-door medical relief), the 28,000 London lunatics, and the unknown numbers dealt with by provident and charitable dispensaries and private practitioners—and one is appalled by the misery and disgrace of it all.

But disease being there, what is to be said, from a statistical point of view, of hospital relief in London? Is it extravagantly or economically carried out? On this point we confess that we have not gleaned much information for ourselves, though perhaps we have laid down bases that may be of use to others. We have shown that one hospital spends more on provisions per bed occupied than another hospital of the same kind, but we have not shown that the former had no relatively larger nursing staff, or that it had no other good reason for a larger expenditure. Nor have we dealt at all with the very interesting questions of the comparison of 1906 with previous years, nor of the London hospitals with provincial and foreign hospitals.

No social question admits of scientific treatment until information is available as to the magnitude and content of the factors for consideration. It is in the fact that this essay sets forth certain of the factors of the London hospital problem in more complete form than has yet been attempted that the author bases its main claim to usefulness.

Discussion *on* Mr. P. E. Braun's Paper.

Mr. Danvers Power said that, having had a great deal to do with the settlement of some of the questions dealt with in the Paper, he would like to state a few facts bearing on the subject. In 1903 the National Hospital for the Paralysed and Epileptic received a notice from the Hospital Sunday Fund, saying that the expenditure was higher than it ought to be. Committees were at once appointed to inquire carefully into every item, and the result of the investigation was that that hospital saved 2,000*l.* a year. He, as chairman of the hospital, was much impressed, not only with what had been done, but also with the great difficulty there had been in obtaining information bearing on the subject of economy. He accordingly suggested to King Edward's Hospital Fund that it should issue an annual statistical report giving to all hospitals in London the information for want of which his own hospital had been losing 2,000*l.* a year. The King's Fund then entrusted him with the duty of preparing the report, which had been issued annually ever since. When he prepared the scheme of the report in the first instance, he found, as everybody before him had found, that there were certain things which entirely disturbed what they called the "average cost per occupied bed." To compare that cost as between different hospitals was futile at that time, however accurate it might have been as a means of comparison between different years of the same hospital. For instance, there was the question of rent; it was ridiculous to take as part of the cost per bed the rent paid by an unfortunate hospital which did not own its building, without noting the apparent absence of rent in the case of one which did. There were other facts equally disturbing, such as, for example, the appearance of wonderfully cheap laundry expenses at some hospitals which had their own laundries, but made no sort of allowance for interest on capital and depreciation of plant. Well, he did what he could by eliminating certain items, in order to arrive at a truer cost per bed in respect of the great items of expenditure. But there remained the difficulty of the out-patient department, the accounts of which were not kept separately. Anyone could see that if you had a hospital of 300 beds and 150,000 out-patients a year, and another hospital with 300 beds, but only 50,000 out-patients, you could not make any just comparison between the two by taking a bed as the unit. The expedient he adopted, and which Mr. Braun criticised, was this:—Variations in the numbers of out-patients only materially affected the surgery and dispensary account. Now, they had reason to believe that the cost of a bed in that account was something between 7*l.* and 8*l.* in the case of large general hospitals. For instance, at the Great Northern Hospital the cost had been calculated to be 7*l.*; at the London Hospital it was 7*l.* 3*s.* 1*d.* He took the average cost of a bed for surgery and dispensary roughly at 7*l.* 10*s.* They also knew that, as far as it was possible to compute, the cost of an out-patient for surgery and dispensary was 9*d.*

Therefore, as 9*d.* went 200 times into 7*l.* 10*s.*, he took 200 out-patients, for the purpose of the surgery and dispensary account, as representing about the average cost of a bed, and treated 200 out-patients as an equivalent unit to a bed.[1] Naturally, he dealt with each different group on its merits. In the consumption hospitals the number worked out at 80. He might mention that the scheme was submitted to Sir Robert Giffen, who, of course, realised that the method was far from exact, but said he could think of no better one in the circumstances. However, their object was, in any case, a very much broader one than that of producing particulars which might bear every minute test. What they wanted to do was to deal with the wide discrepancy which existed between the expenditure of different hospitals of the same class on the same things; and when they had pursued this work for four years they found they had accomplished a saving of upwards 35,000*l.* a year on the forty-eight hospitals concerned. It was said that figures could be made to prove anything. He never thought very much of that saying himself, because so much depended on the folly, or the reverse, of the person who admitted the proof. But there could be no doubt that when figures showed a tolerably broad expanse of undoubted truth, surrounded, as it nearly always must be, by a narrow margin of error, there were certain to be a number of people who preferred to concentrate their attention on the narrow margin of error and to turn their backs on the broad truth. The King's Fund was treated with great generosity by the majority of hospital officials, but criticism with reference to the accounts which were in force at that time, if disproportionate, was just, and in order to remedy all avoidable error the Prince of Wales appointed Mr. J. G. Griffiths, one of the most eminent accountants in the country, to report on the whole question. Mr. Griffiths reported in the year 1905, and during 1906 a committee of hospital secretaries entirely revised the old system of accounts. The new system came into force on the 1st of January, 1907. Considerable attention was drawn to the subject at the time, and when Mr. Braun wrote his essay, a year ago, any hospital secretary in London could have told him that almost everything he asked for had been already dealt with. It was only due to those who had co-operated with the King's Fund in this work that that explicit statement should be made. As far as the essay itself was concerned, he did not know the conditions under which it was written, nor was he any judge of the qualities in prize essays of this kind which should appeal to the judges. He must leave others to speak about the conditions and results of hospital work in London, as there were several persons present who were authorities on that subject. But as regarded the cost, which involved the great question of economy—a question of such vast importance, not only in hospitals, but in all public institutions and almost all undertakings throughout the country—he hoped he would not be doing more than was becoming in a visitor if he said that, as far as he was concerned, he could not agree with the concluding sentence of the Paper.

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[1] This and other estimates were also checked in another way. For example, in the case of the 16 large general hospitals, assuming 7*l.* 10*s.* and 9*d.* to be the cost to surgery and dispensary of an occupied bed and a new out-patient, respectively, the total amount of that account for the year 1904 would have been 68,700*l.*, viz., 4,440 occupied beds at 7*l.* 10*s.*, and 944,000 new out-patients at 9*d.* The actual amount was 68,279*l.*

Mr. E. J. HARPER said he must congratulate Mr. Braun, one of the youngest Fellows of the Society, on the manner in which he had attacked the statistical side of this subject. He thought it would not be difficult to convince Mr. Power that a statistician looked upon the record of the accounts of hospitals not by any means solely with a view to economy of administration; nevertheless it was by statistical methods that the best economy could be obtained.

The idea of arriving at a general cost per bed and applying that as a measure of comparison would never occur to a statistician, and he was surprised that Mr. Power had not taken the opportunity to investigate the way in which, in the tables, the author had distinguished between the various items which went to make up the total cost per bed. Obviously the conditions of no two hospitals were alike in all respects, and therefore a comparison of the total cost per bed was naturally absurd; but there were many hospitals which were sufficiently alike for practical purposes with regard to one particular item of expenditure per bed, and it was here the statistician came in to the assistance of the expert in hospital management, by pressing him to give the information which would enable a statistical comparison to be made between those items which were comparable. It was because of such criticisms as Mr. Braun's, although they had happened to come from a different quarter, that the improvement Mr. Power had so large a hand in bringing about was obtained. He desired particularly to draw attention to a point which Mr. Power had already noticed, namely, the inclusion of rents in the same column of the first table with rates, taxes and repairs. Obviously, unless in the case of freehold hospitals you could arrive at a percentage of the capital value, which might fairly be comparable with rent, it was of no use to include rents in any column of that kind. Rates and taxes were also not comparable in any statistical sense, because, owing to the kindness of heart of the authorities who were responsible for fixing the annual value on which all property had to pay rates, there was a very great diversity in the scales at which hospitals were assessed. Where the conscience of the assessment committee was most tender to the public revenue the hospitals were assessed fairly high; where that conscience was more tender towards the relief of suffering and distress the assessments were low. As assessment committees came and went, and their members changed, there was nothing like a uniform practice except in one regard, namely, that there was not a single hospital in London to-day which was assessed up to its full annual value; consequently the figures might be dismissed as utterly valueless in any comparison of a statistical character. He should also like to draw attention to some of the results which followed from the table on p. 10. There were nearly 11,000 beds in the 123 hospitals, and the average daily number occupied was nearly 9,000; so that there was a margin of nearly 20 per cent. He should like, if possible, to get a little light on the question whether that margin was a fair and reasonable one, having regard to the different classes of hospital on which it was taken, because a margin of 20 per cent. of unused bed accommodation must account for a considerable amount of expenditure, and if there was room for a saving there, that was one of the lines on which economists might well pursue further inquiry. Their temperance friends might be interested in the table on p. 16, where the domestic expenditure per bed of various large hospitals appeared. Under the head of malt liquors the expenditure varied from 0·3*l.* in St. Bartholomew's to 1·28*l.* in the Westminster, with a large number of variations between. On p. 19 the maintenance expenses of the large hospitals were analysed, and there again under the head of water he might call attention to the great inequality which must exist in the charges for water, notwithstanding recent legislation, owing to the fact to which he had already referred, that there was nothing like a proper estimate of the annual value on which the hospitals contributed to the rates, and which also formed the basis of the charge for water. These tables were full of interesting figures, and he might draw attention to the remarkable variety in the two columns of the same table under the heading bed-linen. At Charing Cross it was 0·22*l.* per bed, and at University College Hospital 2·61*l.* per bed. The figures for fuel and lighting also presented a very curious variation which would repay investigation by the authorities of King Edward's Fund, or anyone interested in the economy of hospitals. The last point to which he would call attention was the receipts from patients, which occurred to him to be extraordinarily low in the Special Skin, and Throat, Nose and Ear Hospitals. He might suggest that in those particular hospitals the help given might be less charitable and more commensurate with the payments received from the patients than was the case with the ordinary general hospital. The question of how far the administration of hospitals was charitable, and how far it should extend to persons who were not proper recipients of charity was another question altogether, which he would not attempt to discuss, but it was one on which further figures would throw a great deal of light. Perhaps it was undesirable to attempt to exclude from the benefits of hospitals all persons who were not in absolute need of charity. He might be told by those who knew more about it that the experiment had been tried and failed, but he thought it might be an improvement to endeavour to devise some scale whereby persons who were not able to pay the proper medical fee might be able to pay a fee proportionate to their means. He thought the Society might congratulate itself on having amongst its members a gentleman who at his first attempt had produced an essay which the judges had deemed worthy of the Howard Medal, and worthy of being read before the Society and subjected to public discussion, which he might remind them was not the purpose for which it was written.

Mr. A. W. DAVIS (Secretary of the Hospital Saturday Fund) said it was noticeable that on the first page in the reference to the recent improvements in uniformity of the system of accounts, the Hospital Saturday Fund was not mentioned. It was only right to say that, to his personal knowledge, for the last fifteen years strenuous efforts had been made in order to obtain improvements in the keeping of the accounts of hospitals. During the last twelve months he had written to sixteen hospitals, pointing out discrepancies in the returns sent to the office, and in every case secretaries, and in many cases honorary secretaries, had written stating that they regretted their errors, and were only too pleased to have had them pointed out and to have an opportunity of correcting them. He knew, from reading the minutes of the Hospital Saturday Fund of twenty-five years ago, that they had had many deputations from hospital committees and officials on the question of the statistics of hospitals, and with a view of improving the manner in which they were kept. Since the establishment of King Edward's Fund, in 1897, very much more progress had been made, and it was only just to acknowledge the very courteous attention shown to the Sunday and Saturday Funds by the Council of King Edward's Fund, and perhaps no one had been more helpful than Mr. Danvers Power. He was sorry to see that the writer, near the conclusion, spoke of the work of the hospitals as being "patchwork."[2] He must agree that, unfortunately, at the present time there was a sad want of co-operation amongst the London hospitals, not only with regard to their statistical work, but likewise with regard to the work for which they existed. The author had explained that his Paper was written twelve months ago, and probably without consulting any experienced hospital secretary, otherwise very likely many of the pitfalls to which he had committed himself would not have occurred.

Sir ATHELSTANE BAINES agreed with Mr. Harper that the Paper should be welcomed by the Society, and he was glad the author had had the opportunity of reading it. It was only natural that the essays sent in should be judged largely upon their statistical side, and Mr. Braun had made the most of the material collected. The most difficult statistical point in the Paper, which had caused him considerable doubt, was now, it appeared, cleared up by improvements recently proposed in the method of accounts. As the question of cost per unit was treated in the Paper, he thought comparison between hospitals was not on a statistical basis, and now that he heard that the coefficient of 200 mentioned was based on the data of two hospitals only, he could not think that it was preferable to the other basis adopted. In fact, without the separate tabulation upon a uniform basis of the in- and out-patients' expenditure, he failed to see how the financial administration of the different hospitals could be compared. As to the rating of hospitals, he recognised, as they would all do, that Mr. Harper knew pretty well all that was to be known about Metropolitan assessment, but he was himself inclined to assign the difference in the rating of different institutions not so much to a sentimental regard for charitable work as to the want of a common basis upon which to assess such buildings as hospitals and colleges, with regard to which valuers differed widely. There were two epithets used towards the end of the Paper to which he took exception. One of these was the word "patchwork." It should be made clear that this was applied, not to the work done by the hospitals, he thought, but to the vast field of illness amongst which they found themselves. No city in the world could show so much done and so well done, by private resources, as London, and, through their medical schools, the benefits were not restricted to the Metropolis, but spread over the whole country. Then, again, he would like it to be cleared up to whom the "disgrace" mentioned was imputed. He presumed that what was meant was that it was a disgrace to the civilisation which allowed so much illness to prevail. If so, this brought our civilisation up to the level of that described in Samuel Butler's *Erewhon*, a book more known thirty years ago than now, which dealt with a country where physical shortcomings held the same place in public opinion as moral defects do in ours; and people convicted of pneumonia were spoken of in bated breath, as family scapegraces, whilst sympathetic inquiries were openly made about "your poor dipsomanic." In this sense, perhaps, the existence of an enormous amount of illness in London was a disgrace, but he could not admit that that term could be connected with the administration of London hospitals and their work.

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[2] See footnote, p. 39.

Mr. G. UDNY YULE desired to express his appreciation of this Paper, not solely or principally as a statistician, but as one of the many people who took an interest in hospitals. The Paper had interested him in many ways, and he should be glad if someone representing hospitals would tell them a little more about some of the discrepancies in the expenditure under various heads, and what they meant or might mean in particular cases. Many of those who took a general interest in hospitals would be glad to know what particular pitfalls they might be likely to fall into in endeavouring to compare the accounts of the different hospitals. For example, in the cost of the provisions per bed occupied, why, in the "general hospitals without medical schools," a group which did not sound very heterogeneous, did the expenditure on provisions range from 39*l.* odd at St. John's, Lewisham, and 35*l.* at the Bolingbroke, the Anti-Vivisection, and the Miller Hospitals, down to 21*l.* at the Seamen's and the Italian, and 20*l.* at the West London Hospital? Why, again, in the group of children's hospitals, which one would imagine were still more homogeneous, did the expenditure on the same items range from 21*l.* odd at the Belgrave Hospital, 19*l.* at the Evelina and Great Ormond Street, to 13*l.* and 14*l.* at two or three others? In the case of the "domestic charges per bed," he would like to know why the expenditure on washing should range from about 7*l.* 8*s.* at King's College, and very little less at St. George's, to only about 2*l.* 8*s.* at St. Mary's and 2*l.* 5*s.* at the Royal Free.

The expenditure on bedding and linen, he took it, might vary largely, because it was only the expenditure of one year, and it was easy to imagine that an exceptional purchase might render the figures quite unrepresentative; but a hospital seemed hardly likely to indulge in any one year in an exceptional amount of washing such as would throw up the expenditure on that item to 100 per cent. above the ordinary. On page 13 Mr. Braun made some suggestions as to the units of comparison. It appeared to him that the principal requirements might be put more briefly, and that the most important item was simply the number of "bed-days," *i.e.*, the number of beds available on each day all added up together, rather than the total number of beds and the specific periods during which certain beds were not available. Similarly as regards in-patients, one wanted to know the number of "in-patient days," *i.e.*, the total of in-patients on every day in the year added together. He felt grateful to the author for the information brought forward, and although it was, in a sense, unfortunate that the Paper was written just before the further and much more detailed information with respect to in- and out-patients became available, at least the change that had been made showed that Mr. Braun was justified in the emphasis he laid on the necessity for giving the information which was now presented.

Mr. J. CALVERT SPENSLEY said that as such a strong point was made of the varying rateable values, and consequently the rates paid by different hospitals, he thought some particulars might be interesting. With regard to the hospitals in the borough of St. Marylebone, which had been specifically referred to, he found that, taking them upon the basis of per bed, Middlesex Hospital was rated at 7*l.* 9*s.* a bed, and St. John and Elizabeth Hospital, in the same parish, at 7*l.* 1*s.*, so that in Marylebone there seemed to be a fairly uniform basis; but at the top of the scale came St. Thomas's, with an average of 16*l.* per bed rateable value, which, however, included the medical school and the nurses' home. St. Bartholomew's worked out at 13*l.* per bed, the Royal London Ophthalmic being 15*l.* 5*s.* and Queen's Square National Hospital for Paralysis and Epilepsy 12*l.* 3*s.* per bed, while at the other end of the scale came Poplar Hospital for Accidents, with 12*s.* per bed rateable value, and the Royal Free Hospital, which came to 2*l.* a bed (excluding the medical school); so that there was a range from 12*s.* rateable value, involving 5*s.* or 6*s.* in rates per bed, to 15*l.* or 16*l.* rateable value, involving 5*l.* or 6*l.* in rates per bed. It seemed to him that such extensive variations could only arise by the adoption of varying principles of assessment.

Dr. DUDFIELD pointed out that a hospital such as that at Poplar was on a very different basis, *quâ* rating, from (say) St. Bartholomew's, where, in addition to the site actually occupied by the hospital buildings, there was a very large amount of open ground of high value, which of course came into the rating.

Mr. HARPER said the open square did not come into the rating.

Dr. DUDFIELD said the rating was based on the whole area.

Mr. HARPER said the value of the land on which St. Bartholomew's stood, including the whole curtilage, must be taken for rating purposes, not according to anything like its capital value, but according to the value for the use to which it was put; and therefore the great value which Dr. Dudfield had in his mind was not rated at all.

Dr. DUDFIELD observed that when he read the title of the Paper he expected to find therein some account of the results of hospital work, but he supposed the writer thought that part of the subject too medical for treatment. One point occurred to him, which might be out of date, as so much had been altered since the Paper was written. It was evident that as regards such items as "provisions" there was ample scope for co-operation. The big hospitals which were managed on almost the commercial scale ought to be able to get provisions at a very much cheaper rate than the smaller ones. A practical example of the results of direct purchase from the wholesale market was furnished by the experience of the Metropolitan Asylums Board, which during the past few years obtained most of its supplies without the aid of middlemen, with great benefit to the ratepayers. He could not avoid the conclusion that if the smaller hospitals could be persuaded to enter into a co-operative system amongst themselves, and obtain tenders on a large scale for supplying the necessary provisions, a considerable saving could be effected.

The CHAIRMAN, in proposing a vote of thanks to the author thought it only right to refer to the conditions under which Howard Medal Prize Essays were sent in. The subject was prescribed by the Society about two years ago. A considerable time was allowed for the preparation of the essays, and a date fixed for them to be sent in. They were all strictly anonymous, and therefore from the day the author sent in his essay he entirely lost control over it. It related back to the date at which the theme was prescribed by the Society, and any information that became known to the author after it was prepared, was not available to him. Some remarks of Mr. Power appeared to suggest a censure on those who had to adjudicate on the essays, but he was bound to say in justice to them that they had only two questions to put to themselves: (1) Did the essays comply with the conditions prescribed by the Society in offering the prize, and (2) were they of statistical value? Both of these questions must be answered in the affirmative with regard to this Paper, which was the result of very much care and labour; and he ventured to think that whatever improvements had taken place in hospital management and accountancy since the date to which the Paper related, must be taken as confirmatory of the views which Mr. Braun had formed upon the materials in his possession at that date. He had therefore earned the thanks of the Society.

Mr. **Braun**, in reply, expressed his gratitude to the Chairman for his kind words. Altogether, there had been such an able defence made for his deficiencies that it was hardly necessary for him to say much. Still, he should like to say one word in explanation. The essay was begun in the autumn of 1907, and at that time the only sources of reference he had were the hospital reports and accounts for the year 1906. It so happened that he was not called upon, in the ordinary course of his life, to make himself familiar with the work of hospitals, and having written the essay, he more or less dismissed the subject from his mind. He did not even see the published reports that these alterations had been made in the regulations of the hospital funds until very recently. When he first became aware of the alterations, he neither felt justified, nor could he have spent the time, in altering the essay all along the line. The reason why he had fallen into several pit-falls was that he was not an hospital expert, that he was not kept aware from day to day of what was happening in the hospital world. If he were now writing an essay under the same title he should wish to alter almost all the letterpress he had written, not because it was not good at the time it was written, but because it had become out-of-date. As to the use of one or two unfortunate words, he regretted the word "patchwork," because it suggested an aspersion that was far from his thought. The meaning which he attached to it in writing was merely that since over 2,000,000 people were attended by the hospitals, and a very large number more were looked after with regard to their physical needs by other means in the course of a year, the work of the hospitals and of the other agencies must be patchwork, because they could not keep up their numbers year after year if their treatment wrought permanent cures. That was all he meant by the word, but he admitted it was unfortunate, and, if permitted, should be glad to withdraw it.[3] As to the word "disgrace," he intended to use it in an entirely impersonal sense. It seemed to him a just word to use, although he had no wish to indict anybody in particular. He felt it was a disgrace to civilization that our bodies were so imperfect. He had looked into the accounts of 123 hospitals, and he believed a very large number of them, particularly the extra-London cottage hospitals, were not up to the level of the reports of those which received a grant and advice from the hospital funds. In looking into these reports, he could not find the figures he wanted. There were a considerable number in which the accounts were not kept on the uniform system, and in those cases he had to adjust them as well as he could. In those cases it was impossible even to be certain that you knew the number of beds in the hospital or the average number of patients.

The following were elected Fellows of the Society:—

Frederick Gatus Bowers.
Archibald Boyd-Carpenter.
Barnard Ellinger.
Rev. Theodore Edward Streeter.

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[3] The word is now deleted from the Paper.

FORESTRY *in* SOME *of its* ECONOMIC ASPECTS.

By Professor WILLIAM SOMERVILLE, M.A., D.Sc.

[Read before the Royal Statistical Society, 16th February, 1909.
Mr. NOEL A. HUMPHREYS, I.S.O., in the Chair.]

THE subject of Forestry, in one aspect or another, has been attracting an increasing amount of attention during the past twenty-five years. In 1885 a Select Committee of the House of Commons was appointed "to consider whether, by the establishment of a Forest "School, or otherwise, our woodlands could be rendered more "remunerative." The final report was presented in 1887, and contained the following conclusions:—

That facilities for education should be provided.

That the management of our woodlands left much to be desired.

That on public and national grounds timber cultivation on a more scientific system should be encouraged.

That, apart from any immediate pecuniary benefits, there would be considerable social and economic advantages in an extensive system of planting in many parts of the kingdom.

That a Forest Board be established to organise forestry education, to make provision for examinations, and to prepare an official syllabus and text-book.

The report and minutes of evidence had the effect of stirring up interest, and of directing some attention to the subject, but no specific results ensued.

The Board of Agriculture, chiefly as the outcome of persistent representations made to the President on the occasion of his annual visits to Scotland, appointed a Departmental Committee in 1902, which reported in the same year. Their principal recommendations were:—

That one of the State forests in England should be made a demonstration area, and that a property should be acquired in Scotland for the same purpose.

That education in forestry should be developed in Oxford and Cambridge, and at local centres.

That estate duties, so far as timber is concerned, should be modified.

That the owners of locomotives should be compelled to take measures to prevent sparks getting into woodlands and so of causing fires.

That the Board of Agriculture should repeat the inquiry of 1895 concerning the area of woodlands, and that the character of the timber crop should be ascertained in greater detail.

That the attention of corporations and municipalities should be drawn to the desirability of planting with trees the catchment areas of their water supplies.

With the exception of the proposal in regard to estate duties it is satisfactory to know that these recommendations have been carried out. The State forests in England are being subjected to much improved management, a demonstration area of 12,500 acres has been obtained in Scotland, forestry education has been introduced in both Oxford and Cambridge, and has been provided to a modest extent at several local centres (Bangor, Newcastle-on-Tyne, Cirencester, Wye, Glasgow, Aberdeen[1]), the "Sparks" Act has been passed, the Board of Agriculture has repeated and extended its inquiry as to the extent and character of our woodlands, and corporations and municipalities have been stimulated to plant the catchment areas of their water supplies.

In 1907 the Department of Agriculture and Technical Instruction in Ireland appointed a departmental committee to inquire into the question of afforestation in that country, and their report was entirely favourable to large extension through State agency. A start has been made in the direction of acquiring forest land, and land that may with advantage be planted, but whether the full recommendations will be carried out has not yet been determined.

Lastly, there remains to be mentioned the inquiry that has recently been concluded by the Royal Commission on Coast Erosion and Afforestation in terms of the reference "Whether in connection "with reclaimed lands or otherwise, it is desirable to make an "experiment in afforestation as a means of increasing employment "during periods of depression in the labour market, and if so by "what authority and under what conditions such experiment should "be conducted." In their report the Commission recommend that Forest Commissioners be appointed to determine the specific areas that may with advantage be afforested—amounting, it is estimated, to 9,000,000 acres—and that the work should proceed at the rate of 150,000 acres annually, at a cost for land, labour and material, of 2,000,000*l*. a year. Seeing that this is a reproductive work it is recommended that it should be financed by loan, the annual interest, together with administrative charges, amounting in the first year to 90,000*l*., and rising to over 3,000,000*l*. in the fortieth year, after which, till the eightieth year, the woods would be more than self-supporting. Thereafter there would be a clear revenue of over 21,000,000*l*., which would represent about 3¾ per cent. on the whole of the charges of creation and maintenance accumulated till the eightieth year at 3 per cent. compound interest, less the intermediate returns (thinnings) similarly accumulated. It is suggested that land be acquired by voluntary negotiation where possible, but that compulsory powers be obtained and exercised if necessary. Owners of land falling within a statutory definition of "suitability" would be exempted from the operations of the Act, provided they were prepared to afforest the area within a reasonable time, and in a manner satisfactory to the Forestry Commissioners. Afforestation on the scale contemplated would mean the employment during the winter months of some 18,000 men, who, it is suggested, should be selected on their merits, and not from eleemosynary considerations. Afforestation is thus no panacea for unemployment, though, to the extent indicated, it would react on the general situation.

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[1] The Forestry Lectureship in Edinburgh University was started in 1889.

A subject that has received such a large amount of official attention during recent years, and which has been so favourably reported on by one select and two departmental committees, and by a Royal Commission, must have merits that are intrinsically attractive; and I therefore propose to discuss very shortly some of the social and economic aspects in which forestry, in its widest sense, may be regarded.

In respect of the relative area that is occupied by wood in the principal countries of Europe, we find that the United Kingdom stands at the bottom of the list with 4 per cent., and Sweden at the top with nearly 52 per cent. In Great Britain there has been an increase of 42,127 acres, or 1·5 per cent. between 1895 and 1905. Only in one county, Elgin (15·1 per cent.), does the percentage of woodland exceed 15 per cent., and only in other seven does it exceed 10 per cent. (Kent, Surrey, Sussex, Hants, Clackmannan, Kincardine, Nairn). In four counties of the mainland of Great Britain the percentage is below 2 (Cambridge, Anglesey, Caithness, Sutherland), while in Ireland there are only five counties (Down, Queen's, Tipperary, Waterford, Wicklow) where the percentage exceeds 2. Should 9,000,000 acres be afforested, as recommended by the Royal Commission, the percentage of wooded area in the United Kingdom would be raised from 4 to 15·6, placing this country above Denmark, the Netherlands, and Italy, though still below all the other important countries of Europe. In Scotland, where it is suggested two-thirds of the total area would be situated, the percentage would be raised from 4·6 to 35·4, which would make that country one of the best-wooded in Europe.

TABLE I.—*Extent and percentage of wooded area in certain European countries.*

(Calculated chiefly from the Agricultural Statistics of the Board of Agriculture, vol. xlii, 1907.)

	Total Area.	Wooded Area.	Per Cent. under Wood.
	Acres.	Acres.	
Sweden	101,520,000*	52,734,614	51·9
Russia in Europe, excluding Poland	1,244,367,000†	425,564,842	34·2
Austria	74,102,001	24,174,443	32·6
Hungary, including Croatia and Slavonia	80,979,000	22,262,483	27·5
Germany	133,585,000	34,569,794	25·9
Switzerland	9,900,160†	2,176,907	22·0
Norway	76,717,000†	16,845,400	21·9
Belgium	7,277,000	1,259,000	17·3
France	130,374,482	22,224,134	17·0
Italy	70,787,000‡	10,266,310	14·5
Netherlands	8,038,000*	636,299	7·9
Denmark	9,500,000*	682,823	7·2
England	32,382,550*	1,715,473	5·3
Scotland	19,070,244*	868,409	4·6
Wales	4,748,624*	184,361	3·9
Ireland	20,350,725*	306,661	1·5
Isle of Man and Channel Islands	185,754*	869	0·5
United Kingdom	76,737,897*	3,075,773	4·0

* Excluding lakes and rivers. † Excluding lakes. ‡ Including lakes.

The yield of our forest area will certainly not average a load per acre per annum, but when park and hedge-row trees are taken into account, the British production of timber may perhaps be put at 3,000,000 loads of 50 cubic feet. If we value this at the price of imported hewn timber on the average of five years, namely, 1*l.* 6*s.* per load, or say 6*d.* per foot, actual contents (equal to about 7½*d.* quarter girth measure), we arrive at nearly 4,000,000*l.* sterling as the annual value of our home-grown timber. Or the estimate could be made in another way, namely, by taking the actual returns from certain of the State forests in Germany, and applying them to our own case. In the four principal forest kingdoms of Germany (Prussia, Bavaria, Würtemberg, Saxony) the State forests aggregate 10,372,913 acres,[2] the average annual yield per acre for 1907 being 53 cubic feet (quarter girth measure), the arithmetical mean gross return being 26·3*s.* While the yield in material from these well-managed forests is considerably higher than in our case, the price realised per cubic foot (5*d.* quarter girth measure) is certainly lower, so that the 26·3*s.* may be taken to be fairly confirmatory of the estimate already made. After meeting expenses the Prussian and Bavarian State forests leave practically 10*s.* per acre of net revenue, the figures for Saxony and Würtemberg being 21*s.* and 25*s.* respectively. In none of these cases do the outgoings amount to 50 per cent. of the gross receipts, but in this country expenses of management are probably higher, and may not be materially, if at all, less than 50 per cent. If this proportion were adopted it would mean that our forest area is returning to its owners a net income of about 1,500,000*l.* sterling.

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[2] *Mitt. d. deut. Forstvereins*, 1907, quoted in Appendix xxxi to the Second Report of the Royal Commission on Coast Erosion, 1909.

The timber yielded by British forests is, of course, a relatively small proportion of our annual requirements. On the average of the last five years we have paid for foreign timber over 27,000,000*l.*, a figure which compares with some 18,000,000*l.* fifteen years ago. Our exports of timber and timber goods are valued at something over 1,000,000*l.*, leaving about 26,000,000*l.* as our net annual timber bill at the present time. This figure takes no account of enormous quantities of imported wood products, some of which are set out in Table III.

TABLE II.—*British imports and exports of timber.*

	Imports.		Exports. Average, 1904-08.
	Average, 1889-93.	Average, 1904-08.	
	£	£	£
Hewn	4,815,300	6,263,568	Rough, manufactured, and furniture
Sawn or split, planed or dressed	11,011,968	16,191,669	
Staves	611,811	626,377	
Furniture wood	1,097,136	2,082,092	
Manufactures of wood	639,506	1,991,965	
	18,175,721	27,155,671	1,382,309

TABLE III.—*British imports of certain wood products.*

	Average, Five Years, 1889-93.	Average, Five Years, 1904-08.
	£	£
Cork	854,709	1,055,687*
Caoutchouc†	3,109,445	9,303,010
Gutta percha	586,500	371,554
Rosin	369,287	768,466
Tanning bark	192,759	196,773
„ extracts	—	712,998‡
Turpentine	593,385	1,000,232
Wood pulp	894,842	3,026,807
Mill board and wood-pulp board	—	505,218
	6,600,791	16,940,745

* Average, 1903-07. † This includes "rubber." ‡ 1908 only.

Although we, of all nations, are most dependent on foreign supplies for our requirements of timber, several other countries are also large importers of this commodity. In Table IV I have brought together the more important countries of the world, regarded from the timber point of view. It will be seen that even Germany, with her huge stretches of forest, is an important customer for foreign timber. The United States sells more timber than any country of the world, but as she purchases annually to the extent of about 10,000,000*l.* sterling, her net exports scarcely exceed 8,000,000*l.* Canada also, on balance, has a net export valued at between 7,000,000*l.* and 8,000,000*l.* sterling, while in Europe, Sweden, Russia, and Austria-Hungary export timber of an annual value of 10,000,000*l.* sterling and upwards.

TABLE IV.—*Timber imports and exports from certain countries.*

(From "Accounts relating to Trade," except as regards those marked "S," which are from the *Statesman's Year-Book*, 1908.)

		Imports.	Exports.
Germany	1907	11,622,754*l.*	1,669,552*l.*
France	'07	6,769,560*l.*	2,773,760*l.*
Belgium	'07	6,163,200*l.*	—
Italy	'07	4,187,160*l.*	986,680*l.**
Spain ("S")	'06	1,995,019*l.*	2,833,036*l.*
Denmark*	'06	1,932,777*l.*	138,666*l.*
Norway ("S")	'06	643,083*l.*	4,428,277*l.*
Portugal	'06	367,333*l.*	—
Holland	'07	545,496 tons	1,407,266 tons
Sweden—			
Timber	'06	322,630*l.* ("S")	13,136,943*l.* ("S")
Paper and wood pulp	'06	294,052*l.* ("S")	1,513,065*l.* ("S")
Russia	'07	—	11,321,750*l.*
Austria-Hungary	'07	—	10,931,000*l.*†
United States	'07	9,916,875*l.*	17,933,958*l.*‡
Canada	1907–08	2,715,403*l.*	10,082,055*l.*
Australian Commonwealth	1907	1,606,000*l.*	768,000*l.*
British South Africa	'07	572,000*l.*†	—

* Including furniture. † Excluding furniture. ‡ Excluding paper.

Needless to say, the figures in Tables II and III are not put forward with the view of showing, or even suggesting, that we could in this country ever hope to be self-supporting in the matter of timber and timber products. A large proportion of our imports reach us from tropical and sub-tropical climates, but, on the other hand, the bulk of our supplies have been produced in temperate countries. If we exclude the United States, which sends to us, amongst other woods, pitch pine, a tree that demands for its growth a higher range of temperature than these islands can show, and confine ourselves to countries which for the most part have a climate not unlike our own, we find that from such countries we draw about two-thirds (8,500,000 loads) of our timber imports, paying for them roughly about 20,000,000*l.* annually. On the assumption of an annual increment of about one load per acre, it would take some 9,000,000 acres of forest to give a sustained yield of this amount, and if the recommendations of the Royal Commission are given effect to I do not doubt that eighty years hence we should be producing this yield. Whether the area be 9,000,000 acres or whether the alternative scheme, involving 6,000,000 acres, be adopted, the land has to be found, and it is evident that no such area of "waste" ground exists in this country. Clearly, extension of sylviculture in this country must be associated with displacement of food and with disturbance of population. As regards the former, it may be said that even the most enthusiastic advocate of extended sylviculture does not suggest that good arable land should be planted.[3] Woods, as is well known, show good growth on land of low agricultural and pastoral value, provided the altitude be not too great. This is due to two reasons; the first, that wood removes from the soil relatively little plant food, and the second, that many trees thrive well, in fact some thrive best, where the rainfall is so heavy as to make tillage farming impossible, and even pastoral farming difficult.

TABLE V.—*Amount of the more important constituents of plant food removed from an acre of land by the annual produce of certain crops and trees.*

(From Warington's *Chemistry of the Farm*, 15th ed., pp. 72—74, except as to the nitrogen in Scots pine, which is taken from Ebermayer's *Physiologische Pflanzenchemie*, p. 67.)

Crop.	Weight per Acre (dry).	Amount Removed in a Year's Growth.		
		Nitrogen.	Phosp. Acid.	Potash.
	lbs.	lbs.	lbs.	lbs.
Wheat	4,183	50	21·1	28·8
Meadow hay....	2,822	49	12·3	50·9
Mangolds . ..	7,568	149	52·9	300·7
Beech ...	2,822	10	1·5	4·2
Scots pine....	2,884	5·1	1·0	2·3

Not only do trees require but little plant food, but they have special powers of collecting even that little, inasmuch as their root range is immensely greater than that of grass or of farm crops. Thus it comes about that one may find a crop of timber of maximum quantity and quality on land of a rental value of a few pence per acre, and in support of this statement there is abundant evidence in the volumes of the proceedings of the public inquiries already referred.

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[3] One exception must be made, namely, Mr. H. J. Elwes, who, in a letter to *The Times* of 8th Feb., 1909, advocates planting land, "even if it costs 30*l.* to 50*l.* an acre."

Speaking generally, and with very few exceptions, the land that it is suggested may with advantage be afforested is at present grazed by mountain sheep. Even below the upper limit of profitable tree-growth in this country—1,500 feet—it is seldom that such land can support throughout the year more than one sheep to two acres. The tangible produce that finds its way to market is the four months' old lambs, minus such female lambs as are necessary to maintain the flock at its numerical strength, plus a proportion of the ewes—the "draft" or "cast" ewes. In addition to this meat there is the yield of wool, of which the annual supply for the class of sheep in question may be put at 4 lb. per head, or 2 lb. per acre.

The Royal Commission that have recently reported went in considerable detail into the relationship of afforestation to meat production, and they arrived at the conclusion that the weight of meat, calculated as mutton, that would be displaced by the extensive planting of the class of land indicated, would amount at most to 15 lb. per acre per annum.[4] The weight of meat that would be displaced by the afforestation of 9,000,000 acres would therefore aggregate 60,000 tons per annum; and, utilising the figures of the Milk and Meat Committee of this Society,[5] the Commission pointed out that the meat displaced would amount to 4·81 per cent. of our total home-grown produce, or 2·67 per cent. of our annual consumption.

While there would be some displacement of meat there would be no displacement, though there would be some disturbance of population as a consequence of extended afforestation so long as the work was confined to pastoral areas. In the absence of tillage a very small staff of shepherds suffices to work a grazing farm of the character of those which embrace the hill districts of Scotland, and the north and west of England. The number of sheep placed in the charge of a man varies to some extent with the breed and with the character of the ground, but chiefly with the character of the stock, that is to say, whether it is a ewe or wedder stock. A breeding stock requires most attention, and the usual number allocated to a shepherd—the "hirsel" as it is called all over Scotland—is 500. Wedder stocks—which, however, are hardly known outside the higher ground of Wales and the north of England and the highlands of Scotland—are shepherded at the rate of as many as 2,000, but as the grazing ground of such flocks, for the most part, lies above the planting limit they may in this connection be disregarded. If two acres be allowed to each ewe, it means that one shepherd is employed on a thousand acres, and this figure has been accepted in both the recent English inquiries.

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[4] *Report*, sect. 78—79.

[5] *Journal of the Royal Statistical Society*, vol. lxvii., p. 380.

The question then arises: How many men can find constant employment per unit of area—say, 1,000 acres—in a forest worked upon a definite rotation? The answer will obviously depend upon various considerations: The species of tree, the length of the rotation, the character of the ground, the method of working—whether stocking is accomplished by natural or artificial means, and, if the latter, whether by sowing or planting—whether the trees are sold standing or are first felled, whether the timber is disposed of "in the rough" or is partially converted, and so on. The census reports for 1901 show that 16,395 persons in the United Kingdom were returned as woodmen, and if this figure be used as a divisor for the number of acres under wood, 3,075,773, we get 187 as the number of acres allotted to each man. But, interesting as this figure is, it is obvious that it cannot be applied to our present purpose. A very large proportion of our wooded area is held in such small portions—say under 50 acres—that the owner does not keep a woodman, while in the under-wood districts of England—chiefly the south-east—the woods are often let to the agricultural tenants, who do the cutting with ordinary farm labour. One gets a better idea of the labour that land under wood can absorb, by ascertaining the number of the forest staff on estates with a large area of woodland. But in this country even this method of inquiry will yield a figure that is not quite satisfactory, inasmuch as the growing stock of timber in our woodlands is almost invariably lower than it would be under good management, and consequently the staff required is also somewhat below normal.

The most reliable data as regards labour are undoubtedly furnished by the great State forests of France and Germany, and there it is found that forest work, up to and including the felling of the timber, requires the services or provides the remuneration of one man to 75 to 100 acres. If these figures be adopted, as they have been adopted in recent inquiries,[6] it means that pastoral land converted to sylviculture can maintain a population ten to thirteen times as dense as that which formerly occupied the ground. And this, of course, takes no account of the further labour that is required for hauling the timber, and for manipulating it in the sawmill, pulp factory, or elsewhere.

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[6] *Report of Royal Commission*, Sect. 62—65. *Report of Committee* of 1902, Sect. 9.

I have indicated what is, approximately, the density of the population that forest land can permanently maintain; but, where the forests are first to create, a more immediate question is: What amount of labour will be required during the stage of sowing and planting? The answer to this question also depends on a variety of circumstances—the kind of ground, the species of tree, the size of plant, the method of planting, and others—but, taking a broad average, it is probable that the afforestation of 100 acres will require the services of twelve men during six months. While the general operations of forestry extend throughout the year, the actual work of planting is confined to the period between the middle of October and the middle of March. This is the time of year when labour is most abundant, and it is also the time when work on farms is least pressing. Forestry, therefore, fits in well with our rural social conditions. While the Royal Commission fail to see in afforestation any solution for the problem of unemployment, they point out that it is better fitted than any rural industry to retain population on the land, while it also harmonises well with the development of small holdings. On the Continent most of the winter work in the forests is performed by men who, during summer, are engaged in agricultural operations, generally on their own holdings. It was given in evidence that in Scotland crofters found it an immense advantage to have woods in their neighbourhood, in which they could find remunerative employment at a time when they could be readily spared from their holdings.

A subject that has long interested those who have given their attention to the world's trade in timber is the question of the maintenance of supplies. With few, if any, exceptions those who have examined the situation have come to the conclusion that exports cannot be maintained at their present level, and at no time has the probability of a timber famine been more insisted on than at present. But even so far back as 1656, Gabriel Plattes, in his *Practical Husbandry Improved; or a Discovery of Infinite Treasure Hidden since the World's Beginning,*[7] thus delivered himself: "Now the "multitude of Timber brought yearely from *Norway*, and other parts, "doe plainly demonstrate the scarcitie thereof here: also it may "be conjectured what a miserable case the Kingdome will be plunged "into about an Age or two hence, for want of Timber." But many "an age or two," in the sense in which the term is here used, has come and gone since Plattes indulged in prophesy, and, so far, his prediction has been as completely falsified as another, that he ventured on in the same page, that "all attempts to make iron "with Seacoale or other coales are vanitie." Passing over the intervening time let us see what modern authorities think of the situation. Professor Schlich, in a paper read before the Society of Arts[8] in 1901, and in his book, *Forestry in the United Kingdom*, examines the position most carefully, and to the question "Can we "rely for any length of time on getting the necessary timber, in "fact, so long as we can pay for it?" supplies the answer "By no "means."[9] Mr. J. C. Hawkshaw, in his presidential address in 1902 to the Institution of Civil Engineers, regards the outlook as anything but reassuring, and says: "It is time we began to realise "in this country the position into which we are drifting with regard "to our timber supplies."[10] The Select Committee of 1885-87 had, clearly, reduced supplies of foreign timber in mind when they reported: "It is probable that, with the waste of forest elsewhere, "a brighter future is in store for home forestry." The Departmental Committee of 1902 reported: "It will be found in our "evidence that experts of high authority have recorded the opinion "already expressed in many reliable publications, that the world is "rapidly approaching a shortage, if not actual dearth, in its supply "of coniferous timber, which constitutes between 80 and 90 per "cent. of the total British timber imports."[11] This statement is endorsed and amplified by the Irish Committee of 1907.[12] The Royal Commission on Coast Erosion and Afforestation in their report of this year[13] speak of "The very serious shortage of the "world's supply of timber, to which we must apparently look "forward."

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[7] P. 9.

From the United States Department of Agriculture we have recently had some very disconcerting forecasts of the future supplies of that country. In a publication entitled *The Timber Supply of the United States* it is stated[14]: "No one who is at all familiar "with the situation doubts for an instant that we are rapidly using "up our forest capital. In fact it is unquestionably safe to say "that our present annual consumption of wood in all forms is from "three to four times as great as the annual increment of our "forests. . . . Neither is there any great supply of timber to turn "to outside the United States. With the exception of importa-"tions of small quantities of high-class woods like mahogany, the

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[8] *Journal of the Society of Arts*, Vol. xlix, p. 249.

[9] *Forestry in the United Kingdom*, p. 10.

[10] *Minutes of Proceedings of the Institute of Civil Engineers*, 1902, p. 13.

[11] *Report*, Sect. 10.

[12] *Report*, Sect. 31.

[13] *Report*, Sect. 31.

[14] P. 12.

" only promising source is Canada; but most of the timber there " will be required at home." In their *brochure* on *The Waning Hardwood Supply* the Department pointed out that the cut of hardwood lumber decreased 15·3 per cent. between 1899 and 1906, and that "this decrease took place during a period when American " industries sprang forward at a pace unparalleled; when there was " the strongest demand ever known for every class of structural " material."[15] Further on it is stated, "The largest estimate sets " the figure for hardwoods at four hundred billion feet. If we are " using hardwoods at the rate of twenty-five billion feet per year " this would mean a sixteen years' supply."[16] One other United States publication issued, like the others in 1907, may be quoted. It is entitled *The Drain upon the Forests*, and the question, "How " long will the timber last?"[17] is dealt with as follows. "The " estimates of standing timber in the United States are by no means " satisfactory. The most detailed ones range roughly from fourteen " hundred to two thousand billion feet. Assuming a stumpage " of fourteen hundred billion feet, an annual use of one hundred " billion feet, and neglecting growth in the calculation, the exhaustion of our timber supply is indicated in fourteen years. " Assuming the same use and stand, with an annual growth of " forty billion feet, we have a supply for twenty-three years. " Assuming an annual use of one hundred and fifty billion feet " the first supposition becomes nine years, and the second, thirteen " years. Assuming a stand of two thousand billion feet, a use of " one hundred billion feet, and neglecting growth, we have twenty " years' supply. Assuming the same conditions with an annual " growth of forty billion feet, we have thirty-three years' supply. " With an annual use of one hundred and fifty billion feet these " estimates become, respectively, thirteen and eighteen years."

The forest conditions in Canada were made the subject of special study in 1906 by Herr Scheck, an expert attached to the German Imperial Consulate in Montreal. In his report[18] he gives prominence to the wealth of timber that still exists in British Columbia, whereas in the Eastern Provinces many of the most valuable sorts have been almost or altogether exhausted. The white pine, for instance, which yielded over 17,000,000 cubic feet in 1881, produced less than 2,500,000 cubic feet in 1901. In the same period oak receded from 5,500,000 feet to little more than 100,000. Walnuts and hickories, which were felled to the extent of more than

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[15] P. 1.

[16] P. 8.

[17] P. 15.

[18] *Die Forstlichen Verhältnisse Kanadas.*

1,000,000 feet in 1881, produced a negligible quantity of timber in 1901. Red pine (*P. resinosa*) and larch were felled to the extent of over 7,000,000 feet in 1881, but in 1901 they have disappeared from the lumber lists. That supplies of many valuable sorts are ✓ absolutely exhausted in the Dominion is proved by the fact that in 1904 Canada imported

46,000,000 feet of oak.
11,000,000 feet of cherry, chestnut and hickory.
1,250,000 feet of walnut.
2,500,000 feet of ash.

At present spruce, birch, poplar and second-rate pine form the chief Canadian timber exports.

Much is hoped from the opening up of new forest regions by the construction of railways, and Herr Scheck examines the probabilities in some detail. The conclusion he arrives at is that while new railways that are projected or are under construction—notably the Trans-continental Grand Trunk—will render available large quantities of pulp-wood (*Schleifholz*), they will have but little influence on timber exports.

Those who may be called authorities have thus, rightly or wrongly, arrived at the conclusion that supplies of timber from the east of the Rocky Mountains cannot long be maintained at their present level. From the western seaboard there is now an important export trade with Chili, Japan, China and Australia, but comparatively little from that region reaches Europe. That the export trade from Pacific ports is capable of considerable expansion appears to be proved, but whether the opening of the Panama Canal will induce shippers to seek an increasing market in Europe remains to be seen.

The possibilities of Russia as regards increased shipments of timber are involved in much uncertainty, and still more so is this the case with Siberia. Some information, however, is presented in a recent diplomatic and consular report,[19] which speaks with some hope of developments in Eastern Siberia, where in the Amur and maritime provinces alone the forests are said to embrace 509,000,000 acres, though in density they cannot be compared with those of North America. Spasmodic attempts at export have already been made; China, Australia and South Africa being the markets that have been tried: Whether with reduced supplies and increased prices in the world's markets Siberian timber will reach England remains to be seen, but it is probable that, at least indirectly, it will have an effect on European markets.

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[19] *Report on the Lumber Industry in the Russian Far East*, 1908, by Mr. Vice-Consul Hodgson

The Royal Commission on Coast Erosion and Afforestation took much evidence on the subject of the trend of prices and quality of timber, and the report [20] and volume of evidence prove conclusively that while prices have been steadily rising during the past twenty years, and markedly so during the past ten, the quality has been persistently falling. A rise therefore of 20 per cent. in the price, for instance, of first quality Baltic yellow deal is, in itself, sufficiently serious, but the aspect of the case becomes still more serious when it is found that timber classed as "Grade I" to-day, would, some ten years ago, have been been classed no higher than "Grade III."

Of the four countries on which we chiefly depend for our timber imports, it would appear that we cannot cherish the expectation that either the United States or Canada can long maintain their supplies. While there is uncertainty about Russia (including Siberia) the probability would seem to be favourable to that country maintaining her exports for a long period.[21] As regards the fourth of these countries, Sweden, we have it on the authority of the Central Bureau of Statistics that, in 1900, 106,000,000 cubic feet were annually being withdrawn from her forests beyond what is annually produced.[22] If this be so it would appear that a curtailment of supplies from that country must soon be expected. Time does not permit of the subject being pursued further, though the fact is not overlooked that relief may, to some extent, be found in the direction of the displacement of wood by concrete, iron, and similar substitutes. Much may also be done to prevent and control forest fires, which in the past have perhaps consumed as much timber as has fallen to the woodman's axe. Then, again, nations that have hitherto recklessly exploited their forests are now taking some steps to secure regeneration, and, in the course of time, such action will have its effect on supplies.

If material extension of afforestation is to take place in this, or, in fact, in any country, it can only be through the direct agency of the State. The planting of trees has appealed with great force to individuals, who have formed or extended woodlands to give shelter, afford sport, and improve the amenities of their estates. As often as not woods have been formed to gratify a taste of much the same character as that which induces a man of means to buy pictures, or establish a herd of pedigree shorthorns. The timber that private woodlands yield is of service in the upkeep of the estate, and the revenue resulting from the sale may be substantial as well as attractive. Few landowners care to see woodland reverting to rough pasture, so that one may say that it is seldom that the proportion of woodland on an estate is not maintained. But substantial extension of afforestation on an estate is comparatively rare. Of course there are exceptions, as in the case of the witness who came before the Committee of 1902, and testified that he himself had extended his woodlands by 12,000 acres.[23] But afforestation can never appeal to the individual as a purely commercial undertaking. This, it seems to me, is inherent in the circumstances of the case, for when a scheme of planting is contemplated the landowner has to face two considerations, either of which may make him pause, and both of which will almost certainly make him stop. In the first place the necessary land has to be withdrawn from some other form of utilisation, and this means the loss of immediate income In the second place, capital has to be found for the sylvicultural operations, and this must be accompanied by suspension of interest, or it must entail the payment of interest on borrowed capital. The individual may be quite convinced of the soundness of the investment, and of the ultimately remunerative character of the undertaking, but present necessities are much more potent than future advantages, and especially is this the case where the advantages are quite certain to be reaped by some other individual. In the case of the State, however, the matter appears in an entirely different light. An undertaking whose returns may be deferred for even a century need not deter her from taking action. A century, where an individual is concerned, is overwhelming; a century in the life of a nation is insignificant. To what depths of pessimism must a nation have descended if it dare not postulate an existence of a hundred years! In point of fact a crop of certain kinds of timber may be reaped in half this time, but even this restricted period has no attraction for the individual. On account, therefore, of the necessarily deferred character of the returns of forestry, the State is pre-eminently qualified to undertake the work. But on other grounds also the State makes an excellent forester. Continuity of management, comprehensive working plans, and maintenance of supplies at a steady level can only be satisfactorily secured in State forests. Whether large extension of afforestation in this country is desirable or not is open to argument, but if the desirability of such extension be admitted, the conclusion, it seems to me, cannot be avoided, that the State alone can accomplish the result.

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[20] Sect. 25.

[21] *Schwappach, Forstliche Reisebilder aus Russland, Zeit. für Forst und Jagdwesen*, 1902.

[22] *Sweden*, edited by G. Sundbärg, 1904, p. 620.

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[23] Q. 625.

DISCUSSION on PROFESSOR W. SOMERVILLE'S PAPER.

THE CHAIRMAN said there could be no doubt that this excellent Paper came at a very opportune moment. The subject was of great economic importance and of much social interest, and he had no doubt it would give rise to a good discussion. He would first ask the Hon. Secretary to read a letter which had been received from the President, Sir CHARLES W. DILKE, M.P. :—

The PRESIDENT wrote :—"It is with a very peculiar degree of regret that I find myself absent from the reading of Professor Somerville's Paper, and the discussion which it will provoke.

"Had I been present, certain questions as to the speculative statistics concerning forestry in England would have been asked by myself if others did not put them. Of Scotland and Wales and Ireland I have no sylvicultural experience. By chance my knowledge of the Alice Holt, Parkhurst, and other Hampshire Crown woods, as well as of the New Forest, and the Forest of Dean (with High Meadow) is considerable. The certainty of a return to the Crown from the growth of oak timber under good management has long been known to all who have looked into the facts. In the New Forest, the oak land is affected by the natural desire to preserve the beautiful woods of history, and the stony wastes alone come into the present argument. In Alice Holt, amateur planting has had the same disastrous result as in portions of Dean Forest. Highmeadow Woods, under Dean Forest management, are, on the other hand, good specimens of English forestry. The experience of the Crown lands is not considerable as regards the problem now to be faced. It is understood, though we have not yet seen the evidence, that the scheme of the Coast Erosion Commission mainly concerns the planting of conifer in Scotland, Ireland, Wales, and the North of England.

"Throughout the Paper of Professor Somerville, the facts and the figures seemed to be lumped or averaged; and I should have been glad to be able to suggest the necessity of separating statistics relating wholly or mainly to oak and ash from statistics relating wholly or chiefly to conifers. It would be outside the functions of the Royal Statistical Society to show in detail the risks that would seem to inculcate caution in the case of the coniferous statistics. My point is only, therefore, the insufficiency of tables in which very different kinds of timber-growing are brought together.

"Professor Somerville rightly calls attention, in connection with his figures on the employment of labour, to the distinction that must be drawn between encouragement of natural oak and Scotch fir, on the one hand, and either sowing or planting, on the other. No doubt the large expenditure required on drainage in the Scotch, Welsh, and Irish mountain-lands mainly in view will receive attention in the discussion. From the references in the Report of the

Royal Commission to the supply of timber from Sweden, and to the supposed shortage in wood pulp, it is clear that the evidence must be thought to support the growth of spruce (or white deal) in the United Kingdom upon a large scale. The experience of all foresters is there to show that spruce will not produce good wood in the calculated periods unless the drainage of the roots be such that moss will not kill the trees. The Indian experts, whose official reports on the Crown forests of England have been laid before Parliament, have severely criticised the planting of oak by Lord Glenbervie and other former Commissioners of Woods. It would be worth statistical examination of the records of the woods and forests to see how much the mere drainage of Lord Glenbervie's woods in Dean Forest and Alice Holt originally cost, and how much labour was employed. From what is known of the evidence obtained by the Royal Commission from the Woods and Forests, it would seem that this most valuable source of information has not been statistically considered."

Sir RICHARD B. MARTIN asked what would be the probable effect on the climate of England if afforestation took place to any considerable extent. He believed the forests of India very considerably affected the rainfall of that country, and certainly in Egypt and in Palestine had changed the entire character of the country. He should like to know, therefore, if it was supposed that if Great Britain were to a considerable extent to be re-afforested the rainfall would be considerably increased. It seemed to him that we could do with rather less rain than more, speaking of agriculture generally.

Mr. G. A. H. SAMUEL asked whether this question of afforestation had been considered from the Imperial point of view. It was all very well to talk about going in for forestry within the limits of Great Britain, but the land of this country was, of course, of considerable value, and it occurred to him that if an Imperial Conference could be summoned to consider what portions of the British Empire were most favourably situated for the growing of trees, a more desirable result might be obtained than would be achieved by simply looking at the question from our own island point of view.

Mr. A. E. REED asked if he correctly understood the author that the imports of oak and certain woods into Canada were reckoned in cubic feet. He understood it was the custom to measure by the superficial foot.

Dr. SOMERVILLE said that this statement was a slip.

Mr. REED said that towards the end of the Paper the author spoke of fifty years as the time before which any return could be expected from any forestry efforts, but it occurred to him that with regard to some portion of the woods it would be possible to get a considerable amount of spruce and white pine suitable for pulp wood within a much shorter period. It was well known that the wood most in favour for pulp was about six or eight inches in diameter; and would it not be practicable so to cultivate the ground that when growth to that extent had been attained a crop of pulp wood might be cut out, leaving the larger trees to grow?

Mr. E. R. P. MOON said that he should be glad to know what were the specific improvements referred to in the Paper which had been effected in the State forests.

Mr. COX, referring to the question of the displacement of meat which it was supposed might be involved in a system of afforestation, said it had been shown pretty conclusively that the meat producing capacity of old grass land could be immensely increased by adding suitable manure to it, and therefore the displacement of meat which some seemed to anticipate need not cause the least anxiety. The experiments which had been conducted in various places had shown that by judicious treatment of grass land its meat producing qualities could be increased by at least 100 per cent.

Mr. AUGUSTINE HENRY said he should like to ask the lecturer, who was on the Royal Commission on Coast Erosion, whether that Commission did seriously propose to commence immediately to plant 150,000 acres annually, at a cost of 2,000,000*l*. a year; or whether they hoped by raising the question in such a large way to excite public interest. He was as much interested in the question of afforestation as anyone, but he thought that before going into such large schemes, it would be much better to put before the public some more modest plan which would meet with general approbation. Private owners, to whom the bulk of the land of this country belonged, are practically opposed to this particular scheme. We wanted to enlist the sympathy of all classes of people in afforestation; and it seemed to him that a much smaller scheme to begin with would have been far more politic. He suggested that the Government should purchase further experimental areas, similar to the one lately acquired in Scotland; say one in England, another in Wales, and perhaps two in Ireland. To that no one could make objection, as there was need of Government interference at any rate to the extent of planting 50,000 acres in five separate areas of 10,000 acres each. It would be necessary, of course, to have a Forestry Board, subsidiary to the Board of Agriculture, to consist of trained foresters, and be in charge of these State plantations.

With regard to the question of the unemployed, the Commission had not put forward any feasible scheme, and they had in fact thrown cold water upon their employment. He suggested that each County Council be empowered to acquire in its own area a piece of land for the purpose of setting the unemployed to work upon it, with the proviso that each county scheme of afforestation should be first approved by the Forestry Board. This would be a practicable proposal which could be carried out immediately. Each large town in the same way was naturally interested in its own unemployed, and there was no reason why it should not go in for some small approved scheme of afforestation. The most important step was, however, to aim at gaining over the private owners of land; and in order to encourage planting by landowners, all taxation should be taken off lands that were planted henceforth, provided the planting and subsequent care of the plantations were conducted to the satisfaction of the Forestry Board. After ten years' progress on such lines, those interested in afforestation by the State and local authorities would see what further extension was advisable, and, what was an equally important thing, private owners would certainly have much increased their planting operations. He heard objections to the recommendations of the Royal Commission on all sides. In the first place, it was a very large scheme of State enterprise and quite a new departure, and a great many people were opposed to the State taking on any more burdens, and he believed private owners had quite enough influence to condemn any such scheme as this, under which the State would be competing with them. The scheme recommended in the Report seemed to him far too ambitious; it was not practical politics, and a more modest proposal would be far more likely to receive general support. The data were not sufficient for a large scheme of this kind. No doubt every fact stated in the Paper was perfectly correct, but a great number of things had not been considered, as for example, the amount of planting that would soon be done in other countries where the timber was running short. In Sweden and Norway there was a considerable movement going on with regard to the afforestation question, and no doubt large areas of timber would soon be replanted in those countries. If the three points he had mentioned were borne in mind, namely, small State experimental plantations taken in hand at once, powers given to town and county councils, and private owners encouraged to plant by granting substantial relief from taxation, at the end of ten years we should be in a position to consider whether afforestation ought to be carried out on a grand scale. We must not be too positive about the future. The authors of the Report had built their financial proposals on calculations of the price of timber forty and sixty years ahead, and not the slightest confidence could be given to such calculations.

Mr. R. H. Rew said the Society was very much indebted to Dr. Somerville for having brought this important subject before them in so interesting a way. Everybody knew that he was, perhaps, the foremost authority on forestry in the Kingdom, and he was also one of the nineteen members of the Royal Commission on Coast Erosion and Afforestation. Some people had expressed the suspicion that Dr. Somerville might have had rather more than a nineteenth share in the Report, and if that suspicion did exist it would probably not be removed by this Paper. He had presented, in a clear and concise form, the case for a national scheme of afforestation, and he advocated it on several grounds, two or three of which involved statistical consideration. To those particular points he should address his remarks, because there were certain aspects of this question which it would not be seemly for him to refer to. The author started with a table which he had put in the fore-front of the Paper, so that they might approach a consideration of the subject in a humble and contrite spirit. Dr. Somerville probably thought they ought to be ashamed that the United Kingdom had only 4 per cent. of its area under woodland, as compared with other countries, which made a very much better show. But that class of comparison always left him calm. It might be applied to many other products of which the proportion to the total area was less here than in other countries. For instance, France had 12 per cent. of its area under wheat, whereas we had only 2 per cent.; but he did not suppose Prof. Somerville would necessarily draw any deduction from that fact. In this connection also he reflected that if the Ancient Britons had had the advantage of having a Board of Agriculture the person in charge of their agricultural statistics would have been able to present a return which would have gladdened the heart of Dr. Somerville. Dr. Somerville also referred—and this was one of those points on which his remarks were very interesting—to the effect of the proposed scheme on unemployment, though he did not use any of those phrases which they sometimes heard, about "stemming the tide of rural depopulation." If one looked at the figures, as far as he understood them, if this scheme were carried out entirely, it would provide for the employment of 18,000 men in the winter, whom they would assume, for the sake of argument, might be retained on the land, having a small holding or other means of subsistence in the summer. There would also be 1,500 men permanently employed for every 150,000 acres planted. If that were so, the total number employed at the end of ten years would be 33,000. But when they talked of rural depopulation they were thinking of such facts as were represented by the decline of agricultural labourers during the last decade, for which returns were available, which amounted to 175,000 in Great Britain. It must be remembered that this scheme of afforestation displaced a certain amount of labour. Dr. Somerville had put an interesting argument before them, to show that on the greater part of the land that would be planted the displacement of labour would be very small, say, one man per 1,000 acres, but, even so, eventually on 8,000,000 acres that meant a displacement of 8,000 men, and he had apparently overlooked the fact that in the total of 9,000,000 acres was included 1,000,000 of arable land, on which the displacement of labour according to the usual calculation would mean something like three men to every 100 acres. One of the most interesting parts of the Paper was the particulars given with regard to the exhaustion of the world's supplies of timber, which was a serious question. It was the duty of the nation to do its best to provide for the wants of posterity with regard to timber as well as other things. What the needs of posterity with regard to timber eighty years hence were likely to be it was very difficult to forecast; but, as far as it went, that seemed to him a strong argument. If they did increase their forests up to the extent of 9,000,000 acres, however, it would only be an insignificant fraction of the woodland necessary to maintain the timber supply of the world.

The other main argument brought forward was that there existed in this country a large quantity of land, whether it were 9,000,000 acres, 6,000,000 acres, or any other figure did not for the moment matter, which might be more profitably dealt with by planting than by being left in its present condition. If that were so, and he did not dispute it, it was, no doubt, a strong argument in favour of some effort being made to see that this particular class of land was more profitably developed.

The CHAIRMAN then propossd a vote of thanks to Professor Somerville for his Paper, which was unanimously carried.

Professor SOMERVILLE, in reply, said a great deal of misconception existed as to the effect of extensive afforestation on climate, and also as to the effect of extensive disafforestation. Forests had a great deal of influence in many ways, not so much, however, on climate as on other circumstances. They all knew that if forests were cleared, on a large scale, from hills and mountains, the soil which was thus exposed to the rain, especially in regions of torrential rainfall, was largely washed away, and the ground left bare and sterile, but that was not a question of climate. The influence of forests on climate was, in the first place, to break the force of winds, as anyone might experience when on the lee side of a forest in a gale. To that extent they improved the climate, making it more tolerable for stock, and reducing the damage done to crops by gales. In the second place, it was found by observation that the temperature in a forest during winter was rather higher than in the open country, and during summer the temperature was considerably lower, so that forests had a tendency to equalise climates, and to that extent were beneficial. Their effect on rainfall was practically nil. This question had been gone into in great detail by many individual workers and by associations of forest experts, which included members of many of the State Forest Boards of Europe, America, and Japan, and they had come to the conclusion that the extensive planting of land would have much the same effect on rainfall as a rise in altitude of 100 feet. As one went higher, the rainfall, other things being equal, became heavier; it was slightly heavier at 200 feet than at 100; and slightly heavier at 900 feet than at 800; the increase being about 5 per cent. on the total rainfall. If the total rainfall at any one place were 20 inches, and if enormous forests were created there, the rainfall subsequently would be 21 inches, so that he did not think anyone need order waterproofs in view of the effects of afforestation.

A very interesting point was raised whether we in this country should undertake a great extension of timber-growing, or should leave the task to be undertaken by our Colonies. Of course, no one suggested that we should attempt in this country to grow all the timber we required. The amount which would be produced even on 9,000,000 acres of land, would be only, at most, two-thirds of our present requirements; we could not, under any reasonable circumstances, hope to make ourselves anything like independent of imports; but the point that the British Empire should take stock of the position, and see whether our Colonies could not improve their supplies, was very important. He was glad to say that, at the meeting of the British Association in Canada next August, it was intended to discuss the whole situation from the Imperial point of view.

The question had been raised whether returns could not be obtained in less than fifty years at least, for the purpose of paper-making; and he did not think it would be possible. Forests, to produce wood suitable for pulp, must be greatly crowded, so that the branches should not be plentiful and should not grow strong. He had been over many paper works in various countries, and the first thing that happened, when a block of wood was brought to a pulp-mill, was to carefully remove every knot. Now, the wider apart trees were grown, the bigger and more frequent were the knots, and a main object in growing timber for pulp was to crowd the woods to such an extent as to have as few knots as possible. The more one crowded the woods, the smaller was every individual tree; therefore, with spruce, which was the only European tree of any importance for pulp-making, you would not have, under a rotation of fifty years, any chance of obtaining material of suitable dimensions, though one could no doubt get some return from thinnings before that, as, in fact, is pointed out in the Report of the Commission.

It was suggested that the improvement that he had indicated as having occurred in the Crown woodlands was problematical; but the management had really very much improved during the last ten years. They had, in the Forest of Dean, a retired officer of the Indian Forest service, who was carrying through operations there on a definite plan, prepared by Mr. Hill, one of the most distinguished Forest servants, and the High Meadows Woods particularly, were now being subjected to greatly improved management. No great change need be expected in the New Forest, because, by Act of Parliament, only a relatively small portion could be inclosed and protected against stock. The New Forest was managed as a sort of recreation ground, not a place for growing timber.

He would not say anything about the improvement of grass-land by an intelligent method of manuring, although he admitted that it was by no means so productive as it might be.

His friend Dr. Henry had raised a series of interesting questions, some of which could be disproved by the report of the Royal Commission, and would be further disproved by the volume of evidence which would soon be published. He had overlooked the terms of the reference, which specifically directed the Commission to have regard to the problem of unemployment, and they could not go beyond that. Dr. Henry would like local authorities to be utilised more than the Commission had suggested in connection with forestry, but they came to the conclusion that, on the whole, the Imperial

Government could deal with the situation better than a local authority, the reasons for this belief being set forth in the Report. Local authorities had already experimented on the application of unemployed labour to forests, and there was evidence of what had been done at Leeds, Bradford, and one or two other places. Dr. Henry said private owners were dead against this scheme, and they could not proceed without their consent. That was news to him; he had no idea that private owners were against it. He had a letter from a large landowner in Scotland, who said they approved of it, and he hoped the country would not be satisfied with one acre less than was proposed. The fact was that owners of the type of land in question were confronted with a far more serious question, the sheep-stock valuation problem. Those who were acquainted with the extremely difficult situation created in the Highlands with regard to the valuation of stock, knew that Highland landowners would be only too thankful in many cases to get full value for their land, and hand over the management of it to the Government, or anyone else. One of the largest landowners, when asked by the Commission if he had any objection to the State acquiring land compulsorily for afforestation, said, "By no means"; but he thought the owner should have an opportunity subsequently of resuming possession on paying the State for all its outlay, plus 3 per cent. compound interest. Not a single witness, of whom there were about fifty, objected to State afforestation, and they might assume there were Individualists, Socialists, Conservatives, Liberals, and others amongst them. They all seemed to think that if a scheme of afforestation was to go forward, it could only be through State agency.

He agreed that the question of rating and taxation should be looked into. The Committee of 1902 did go into the subject, and it was found that the law was all right as regards rating, but the practice was all wrong. The Act of 1874 laid it down that if land was used for growing forest trees it should be rated at its unimproved value, as if it were in a state of nature. It meant, therefore, that land that might be let at 1*l*. an acre for agricultural purposes should, if planted, be rated at its unimproved value, having no regard to buildings, fences, drains, manures, roads, or anything of the kind; and this value may be no more than 2*s*. 6*d*. an acre. But, in practice, when a landowner planted an area with trees, the local assessment authority raised the rates, and very often the landowner, for various reasons, did not care to fight the question.

Mr. Rew, in his kindly criticism, rather attributed to him sentiments that he did not altogether subscribe to; he wanted to make him say that the greater the percentage of woodland, the happier the nation, but that could hardly be read into the Paper. Many people thought, however, that there were large areas in this country, which are at present returning a pastoral rental of a few pence per acre, which would yield much more if they were put under wood. Last year the Government purchased an area in Scotland of 12,500 acres at 2*l*. an acre, all of which was below the altitude of 1,400 feet, and therefore below the planting limit. The land lay, for the most part, along the banks of Loch Awe. The rental, sporting and pastoral, was at present little more than a shilling an acre, and in the opinion of many the area was admirably fitted for the growth of trees, and from the point of view both of furnishing employment and yielding revenue it would be much better under forestry than under pastoral occupation. Similar land existed in large quantities in many parts of the country, and it was this class of land that many thought should be taken in hand under a large scheme of national afforestation.

Dr. W. N. SHAW, who was prevented from attending, subsequently wrote:—

"The suggestion of any influence of afforestation upon our climate is not very serious. So long as we live within a few hundred miles of the Atlantic, between latitudes 50° and 60°, we are not likely to be dependent upon the influence of a few million trees. As applied to a country where rain is spasmodic, and the surface soil is blown sand, or something equally permeable, the question is worth consideration.

"In the north of Africa, I believe you can find places where the irrigation is just covered over with sand; the water goes on circulating underneath, finding its way through the sand as a stream does sometimes through a pebble bank on the shore. If you planted trees which would tap the sub-surface water, there would, no doubt, be a considerable change in the state of the atmosphere up above the forest as compared with no forest—a good deal of water would get into the atmosphere, instead of simply running away underground. Beyond this modification, I do not know that anything is proved. Whether you could catch the evaporated water again as rainfall is at present a matter of speculation.

"The influence of sand on civilisation is an economic chapter that has still to be written; but sand has a sort of way of improving its position according to a compound interest law, and in time, certainly, it must reach a point when it can affect climate. In so far as trees enable one to control sand, they will produce an effect upon climate in those regions where sand is an element of climate."

The following were elected Fellows of the Society:—

William Waldorf Astor.
Percy James Kirkham-Hogbin.
Richard Denman Morris.
Arthur Pritchard, M.A., Oxon.
Lee J. Wolfe.

MISCELLANEA.

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I.—*Arthur Wilson Fox, C.B.*

THE Civil Service has sustained an irreparable loss by the death, on the 21st of January, of Arthur Wilson Fox, Comptroller General for Commerce, Labour, and Statistics at the Board of Trade. Mr. Wilson Fox was born in 1861, being the eldest son of the late Dr. Wilson Fox, F.R.S., Physician in Ordinary to Queen Victoria and a member of the Somersetshire branch of the well-known Quaker family of Fox. Mr. Wilson Fox was educated at Marlborough and at Clare College, Cambridge, being subsequently called to the Bar at the Inner Temple in 1886. He then practised on the Western Circuit, but soon found means to enlarge the sphere of his activities by taking a prominent part in the extension of the Primrose League, at that time in its infancy. In addition to this work, Mr. Wilson Fox was already engaged in qualifying himself for those intensive studies of labour conditions and agricultural life in which he was afterwards unrivalled. His qualifications in this respect gained him the notice of the Duke of Devonshire, the Chairman of the Royal Commission on Labour, who in 1892 appointed him an Assistant Commissioner, and as such he wrote reports on certain counties in England and Ireland which proved of great value to the Commission. Again, in 1894, he was appointed Assistant Commissioner to the Royal Commission on Agriculture, of which Mr. Shaw Lefevre (now Lord Eversley) was chairman. In that capacity Mr. Wilson Fox reported on several counties in England in 1894-95, and it was largely in consequence of the reputation gained by these reports that he was appointed, in 1895, by the Board of Trade to be their Agricultural Correspondent, a post then created as part of the new Labour Department. Thus began that connection with the Board of Trade which, though comparatively short in years, has proved of immense value to the country's service. In 1897, when Sir Robert Giffen was succeeded as Comptroller General by Sir Alfred Bateman, a place was found for Mr. Wilson Fox as Assistant Commissioner for Labour. Meanwhile, he had undertaken some heavy work outside the Department, having been made Secretary of the Royal Commission on Local Taxation, which sat from 1896 to 1902, under the chairmanship of

Lord Balfour of Burleigh. In that capacity he is credited with having drafted several reports, both for the majority and minority of the Commission, and the little book which he afterwards published on the "Rating of Land Values" (P. S. King and Son) has proved to be a very useful guide to the principles affecting land values and local taxation.

For his services on the Rating Commission, Mr. Wilson Fox was given the Companionship of the Bath in 1902.

In 1903 Mr. Wilson Fox became Deputy Comptroller, and three years afterwards Comptroller General of Commerce, Labour, and Statistics at the Board of Trade.

The work of this Department, or rather group of Departments, has necessarily been greatly extended of late, and in recent years the pace of this increase has perceptibly quickened. To a nature such as that of Mr. Wilson Fox, the taking on of new work seemed not only a duty, but a pleasure, and the smiling ease with which for months together he seemed to stand the labours of at least twelve hours' work a day only concealed the mischief which was steadily undermining his constitution.

The work in which Mr. Wilson Fox showed his qualities at their very best was perhaps the settlement of labour disputes. He took a prominent and useful part in all the recent negociations connected with the cotton, engineering, railway, and other disputes, and the strong position which the Board of Trade now occupies as an impartial authority in these difficult questions is largely due to the tact and tireless patience with which he followed and helped to guide the various developments.

The Labour Department alone would have sufficiently exhausted the energies of an ordinary worker, but, in addition, both the Commercial and Statistical branches continued to demand more and more attention. Mr. Wilson Fox had not, indeed, had the advantage of early training in statistical science, and it was only another instance of his wonderful aptitude for acquiring knowledge almost by intuition that he was able to direct so efficiently the Statistical branch of the Board of Trade, and, indeed, to organise extensions in several directions, notably in the new Census of Production, and in the series of investigations into cost of living at home and abroad.

Besides all this new work at the Board of Trade, Mr. Wilson Fox took his full share as member or witness, and sometimes both, in various departmental committees.

In the last two years he was a member of the Railway Accounts Committee and the International Exhibitions Committee, and as a result of the last-named committee, a new branch called the Exhibitions Branch has lately been added to the Commercial Department, thus making, *pro tanto*, a further extension to the Comptroller-General's responsibilities.

Mr. Wilson Fox was elected a Fellow of the Royal Statistical Society in 1900, and served on the Council from 1903 till his death. He became one of the honorary secretaries in 1905. Unfortunately the immense stress of work at the Board of Trade prevented him from giving much time to the Statistical Society in these latter years, though in 1903 he read to the Society an interesting and important paper on "Agricultural Wages in England and Wales in the last fifty years." It must always be remembered that the indebtedness of the Royal Statistical Society and of statistical science to a real statistician is by no means confined to the papers which he writes for the Society.

The constant and loving enthusiasm which Mr. Wilson Fox showed in the study of the individual bore fruit in the increased scope as well as in the improved completeness of the statistical publications of the Board of Trade. No wonder then that Ministers of the Crown, to whom his work and worth were familiar, are conspicuous among the many statisticians and economists who are to-day mourning the loss of Arthur Wilson Fox. A.E.B.

II.—*Colonel Carroll D. Wright.*

By the death of the President of the American Statistical Association this Society has lost one of the distinguished Honorary Fellows whose name was added to that roll in 1893. At the time of his decease, on the 20th of February last, Carroll Davidson Wright was President of Clark College, Worcester, Massachusetts. This post he had accepted a few years ago on his retirement from the high official functions which, as Commissioner of the United States Department of Labour, he had discharged with widely-recognised ability after he was transferred to the service of the Federal Government from that of his own State of Massachusetts, where his statistical work and administrative ability had originally made its mark as chief of the Bureau of Statistics of Labour.

In both fields of official action, the name of Colonel Carroll D. Wright was familiar not only to the statisticians of his own country or among those of Great Britain, whose interest in the industrial conditions of the great American Republic has always been keen, but throughout the statistical offices of the world at large. He was selected in 1885 by the International Statistical Institute, on its foundation, as one of its original members, and played an active part in the sessions held by that body in Chicago in 1893. On that occasion he welcomed, on behalf of the Government of the United States, the visitors from this side of the Atlantic, and there also he presented an important review of the course of wages throughout the United States for the half century which had elapsed since 1840. The value of his work to students of statistical and economic research was recognised in 1905 by the Institute, when he was promoted to the grade of honorary member of the international body. Among other honours conferred on the subject of this memoir, he was an honorary member of the Russian Imperial Academy of Science, and a corresponding member of the Institute of France, while he had at one time or another occupied the chair of all the most important associations, economic and statistical, of his own country, where the loss of so able and strenuous a worker will be deeply felt.

No record of his service to his country would be complete without a list of official and other publications too long for the space at our command in this journal. But the various incidents of his career, from his early military service in the Civil War onward through the varied tasks which marked his devotion to so wide a field of educational, sociological, and industrial interests, earned for him a position of high eminence and of judicial reliability among the administrators of his country's public business. The fortunate presence in Europe of one of his colleagues permits this inadequate note to be extended by a further brief appreciation of the statistician whose death we now deplore, from the pen of a countryman of his own.

P.G.C.

CARROLL D. WRIGHT, Honorary Fellow of the Royal Statistical Society, and for the past ten years doubtless the most widely-known and highly-honoured statistician in the United States, died at his home in Worcester, Massachusetts, 20th February, 1909, in his sixty-ninth year. During the Civil War he enlisted as a private in the Federal Army, and before its end rose to the rank of colonel. He then resumed the study and practice of law, and, after becoming a member of the Massachusetts Senate, was appointed, in 1873, chief of the recently-created Massachusetts Bureau of Statistics of Labor. During the twelve years for which he held this position, State after State and country after country followed the lead of Massachusetts in creating offices for the statistical study of labour problems like that he was the first to make a success; and when, in 1885, a Federal Bureau was established at Washington, Mr. Wright was appointed as its head. For twenty years, until approaching age led him to insist upon his release, he was retained at this post by Presidents of both political parties. He also completed the eleventh census, and acted for the Federal Government in many labour disputes, of which the anthracite coal strike was probably the most important. But his greatest work was in applying the statistical method to the study of the conditions of the wage-earning classes in the United States. No man, with the possible exception of his elder friend and model, Francis A. Walker, has rendered greater services to American statistics; and, as Mr. Walker's statistical work was but a part—perhaps, a minor one—of his public career, and that of Mr. Wright absorbed his whole energies for thirty-two years, the contribution of Mr. Wright may fairly be deemed the greater. Those who knew him only through his publications are ill-qualified to appraise the loss caused by his death. A man of untiring energy, ready sympathy, infinite tact, and buoyant optimism, he was the centre of an earnest and devoted group of younger men, to whom he was an inspiration and a guide, and much of the credit for their work must be ascribed to him.

W. F. WILLCOX.

III—*Prices of Commodities in* 1908. By A. SAUERBECK.

THE following table shows the course of prices of forty-five commodities during the last twenty years as compared with the standard period of eleven years, 1867-77, which in the aggregate is equivalent to the average of the twenty-five years 1853-77 (see the Society's *Journal*, 1886, pp. 592 and 648, and 1893, pp. 220 and 247).

Summary of Index Numbers. Groups of Articles, 1867-77 = 100.

	Vegetable Food (Corn, &c.).	Animal Food (Meat, &c.).	Sugar, Coffee, and Tea.	Total Food.	Minerals.	Textiles.	Sundry Materials.	Total Materials.	Grand Total.	Silver.*	Wheat Harvest.†	Average Price of Consols.‡	Average Bank of England Rate.‡
89	65	86	75	75	75	70	68	70	72	70·2	103	98	$3\frac{6}{10}$
90	65	82	70	73	80	66	69	71	72	78·4	106	96½	$4\frac{5}{10}$
91	75	81	71	77	76	59	69	68	72	74·1	108	95¾	$3\frac{3}{10}$
92	65	84	69	73	71	57	67	65	68	65·4	91	96¾	$2\frac{5}{10}$
93	59	85	75	72	68	59	68	65	68	58·6	90	98½	$3\frac{1}{10}$
94	55	80	65	66	64	53	64	60	63	47·6	106	101	$2\frac{1}{10}$
95	54	78	62	64	62	52	65	60	62	49·1	91	106¼	2
96	53	73	59	62	63	54	63	60	61	50·5	116	111	$2\frac{5}{10}$
97	60	79	52	65	66	51	62	59	62	45·3	100	112¼	$2\frac{6}{10}$
98	67	77	51	68	70	51	63	61	64	44·3	120	111	3¼
99	60	79	53	65	92	58	65	70	68	45·1	113	107	3¾
00	62	85	54	69	108	66	71	80	75	46·4	99	99½	4
01	62	85	46	67	89	60	71	72	70	44·7	106	94	3¾
02	63	87	41	67	82	61	71	71	69	39·6	113	94½	$3\frac{3}{10}$
03	62	84	44	66	82	66	69	72	69	40·7	104	90¾	3¾
04	63	83	50	68	81	71	67	72	70	43·4	93	88¼	$3\frac{3}{10}$
05	63	87	52	69	87	72	68	75	72	45·7	113	89¾	3
06	62	89	46	69	101	80	74	83	77	50·7	116	88¼	4¼
07	69	88	48	72	107	77	78	86	80	49·6	117	84	$4\frac{9}{10}$
08	70	89	48	72	89	62	73	74	73	40·1	111	86	3
verage													
9-1908	64	86	48	68	92	67	71	75	72	44·6	109	92¼	$3\frac{7}{10}$
8-97....	62	81	66	70	70	59	66	65	67	61·0	101	101¾	$2\frac{9}{10}$
8-87....	79	95	76	84	73	71	81	76	79	82·1	97	99½	$3\frac{2}{10}$

* Silver 60·84*d.* per oz. = 100.

† Wheat harvest in the United Kingdom, 29 bushels = 100.

‡ Consols and bank rate actual figures, not index numbers; consols 2¾ per cent. from 1889
per cent. from April, 1903.

The index number of all commodities was 73 last year, or seven points lower than in 1907. It was 27 per cent. *below* the standard period 1867-77, but slightly (one point) *above* the average of the last ten years and 10½ per cent. *above* the average of the lowest decade on record, 1890-99 (average index number 66).

Corn and animal food were on the *average* a little higher than in the previous year, but the three groups of materials, particularly minerals and textiles, were considerably lower.

The monthly fluctuations were as follows :—

February, 1895....	60·0	May, 1907....	82·4	June, 1908 ..	72·9
July, '96....	59·2	December, ,, ...	76·2	July, ,, ...	73·1
,, 1900....	76·2	January, 1908....	76·0	August, ,, ...	72·2
December, 1901....	68·4	February, ,, ...	74·5	September, ,, ...	72·5
,, '04 ...	70·9	March, ,, ...	74·1	October, ,, ...	72·2
,, '05 ...	74·9	April, ,, ...	73·8	November, ,, ...	72·2
,, '06 ..	79·7	May, ,, ...	73·6	December, ,, ...	72·3

There was practically a continuous fall last year until August; since then the average index number has experienced but very slight variations. The year closed with an average decline of 5 per cent.[1]

Taking articles of food and materials separately, the index numbers compare thus (1867-77 = 100 in both cases) :—

	Average.			Feb., 1895.	July, 1896.	Feb., 1900.	July, 1900.	May, 1907.	Dec., 1907.	Dec., 1908.
	1878-87.	1888-97.	1899-1908.							
Food	84	70	68	63·8	60·0	65·8	71·2	73·5	73·6	70·1
Materials	76	65	75	57·0	58·6	81·9	79·8	88·9	78·1	74·0

Both classes have suffered to the extent of about 5 per cent. since the close of 1907.

The position of the six separate groups of commodities at the end of the last three years in comparison with whole periods is illustrated by the following index numbers (1867-77 = 100 in each case) :—

	Average.			Dec., 1906.	Dec., 1907.	Dec., 1908.	Last Year, per Cent.
	1878-87.	1888-97.	1899-1908				
Vegetable food, corn, &c.	79	62	64	62·0	73·4	68·0	fall 7
Animal food (meat and butter)	95	81	86	88·1	87·9	85·6	,, 3
Sugar, coffee, and tea	76	66	48	46·7	49·0	47·0	,, 4
Minerals	73	70	92	112·7	92·0	87·9	,, 4½
Textiles........................	71	59	67	80·8	68·6	60·1	,, 12
Sundry materials........	81	66	71	77·3	76·1	75·3	,, 1

Corn had a rather steady market, though it closed somewhat lower than a year ago, but potatoes were much cheaper. Meat sold at high prices in the summer, and beef was still dearer at the end of the year than in December, 1907, while mutton, bacon, and butter have fallen. Sugar ruled somewhat higher till the middle of the year, but lost part of the advance; coffee and tea were on a low level. The fluctuations of minerals were moderate after the heavy fall in 1907, and iron showed very little variations for the principal standards; hematite lost 8*s*. per ton. Copper fell from 62*l*. per ton to 57*l.*, but recovered to 63¾*l.*, while tin rose from 123½*l.* to 145*l.* per ton, and closed at 132*l.* For coal, the tendency was downward. Cotton declined from 6·13*d.* per lb. to 5*d.*, and hemp, jute, and silk were also much cheaper. Wool fell heavily in spring, but recovered part of the decline later on. The average of textiles shows a strong reduction. Hides, leather, tallow, and palm oil were lower on the average, but sundry materials in the aggregate showed little change at the end.

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[1] In January, 1909, the index number was 72·0, and in February, 71·9.

*Quarterly Movements of Prices.**

Summary of Index Numbers, 1867-77 = 100.

Years.	Quarters.	Vegetable Food (Corn, &c.).	Animal Food (Meat, &c.).	Sugar, Coffee, and Tea.	Total Food.	Minerals.	Textiles.	Sundry Materials.	Total Materials.	Grand Total.	Silver.†
1899....	IV	59·6	77·4	53·6	64·8	98·8	68·7	68·7	76·8	71·8	44·5
1900	I	60·2	80·2	53·4	66·2	107·9	70·6	72·1	81·3	74·9	45·3
	II	62·3	87·5	55·0	70·0	108·6	65·4	71·4	79·6	75·6	45·6
	III	64·0	86·1	55·9	70·5	111·0	64·5	71·1	79·8	75·9	47·0
	IV	63·7	85·3	52·3	69·3	105·5	60·9	71·5	77·4	74·0	48·8
'01	I	62·5	87·4	48·6	68·7	94·0	60·3	70·6	73·7	71·6	45·7
	II	63·4	85·2	46·5	67·9	88·5	59·5	70·9	72·1	70·3	44·9
	III	61·5	85·8	43·8	66·7	86·7	59·6	71·1	71·7	69·6	44·3
	IV	62·3	84·1	42·3	66·1	83·9	58·2	72·2	71·0	69·0	42·6
'02	I	62·0	84·3	41·3	65·8	82·2	59·6	72·8	71·3	69·0	41·5
	II	63·5	90·5	39·6	68·5	83·2	60·3	72·7	71·7	70·3	39·2
	III	63·2	89·2	39·2	67·7	82·6	61·7	70·3	71·0	69·6	39·6
	IV	61·9	84·9	41·7	66·1	82·3	61·7	70·1	70·8	68·8	37·0
'03	I	61·6	86·9	42·6	67·0	85·7	63·7	70·2	72·4	70·0	36·6
	II	62·5	84·1	42·9	66·4	82·9	65·6	69·2	71·8	69·5	40·1
	III	64·0	85·0	43·2	67·3	81·0	65·9	68·7	71·2	69·5	43·6
	IV	61·7	81·7	45·1	65·6	80·3	67·9	69·9	72·1	69·3	43·8
'04	I	63·7	79·9	45·3	65·8	82·0	74·0	69·5	74·2	70·7	42·8
	II	62·9	84·7	48·1	67·8	79·9	70·2	66·9	71·4	69·9	42·0
	III	63·5	85·8	50·1	68·9	79·5	70·5	66·8	71·3	70·3	43·7
	IV	63·4	83·4	55·3	69·1	84·7	68·4	67·6	72·5	71·0	45·2
'05	I	62·6	85·7	58·6	70·3	85·6	67·9	67·0	72·3	71·5	44·6
	II	63·1	88·4	53·0	70·3	83·9	69·7	68·5	73·0	71·9	43·8
	III	61·9	87·9	47·9	68·6	87·0	74·9	67·9	75·2	72·4	45·8
	IV	62·9	86·6	46·1	68·1	94·1	75·5	70·8	78·5	74·1	48·8
'06	I	62·1	89·6	45·3	68·7	96·7	76·5	72·1	80·1	75·3	49·7
	II	63·8	89·0	45·1	69·2	99·1	81·3	72·7	82·5	76·8	50·3
	III	61·3	89·3	46·5	68·5	101·4	80·1	73·3	83·0	76·9	50·7
	IV	61·7	87·9	47·0	68·1	110·5	80·4	76·6	86·9	78·9	53·0
'07	I	64·0	88·7	46·7	69·5	112·2	80·0	78·8	88·2	80·2	51·5
	II	69·7	88·7	48·0	72·1	112·6	79·8	80·0	88·7	81·7	50·6
	III	70·1	89·1	49·1	72·7	106·5	76·8	77·5	85·1	79·9	51·9
	IV	73·8	87·0	48·2	73·3	95·9	71·2	76·5	80·1	77·2	43·3
'08	I	71·7	88·9	49·1	73·3	92·0	64·9	73·8	76·0	74·9	42·0
	II	71·1	90·0	50·0	73·7	87·7	62·6	71·7	73·2	73·4	40·3
	III	68·2	90·3	47·2	71·9	88·4	61·7	71·7	73·1	72·6	39·3
	IV	67·8	85·1	47·0	69·8	88·5	61·0	74·3	74·0	72·2	37·7

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* The four quarterly figures of each year do not in all cases exactly (in the decimals) agree with the annual averages, as the latter are partly calculated from revised figures. See also the Society's *Journal*, 1893, p. 221; 1895, p. 144; and 1901, p. 90.

† Silver 60·84*d.* per oz. = 100.

The quarterly numbers show the average of three monthly figures, and by thus eliminating minor fluctuations they give a more reliable comparison of the gradual changes of the various groups of commodities. Last year's figures show the constant fall of the general index number and of corn and textiles. Meat indicates the higher position in the middle of the year, while minerals showed little variation after the fall in the second quarter.

The following figures show in each case the average index numbers of all the forty-five commodities for ten years (see the dotted line in the diagram of the *Journal*, 1886, and also the *Journal*, 1893, p. 220); they give the best picture of the gradual movement of the *average* prices of *whole periods*, as the ordinary fluctuations are still further obliterated :—

1818–27 = 111
'28–37 = 93
'38–47 = 93
'48–57 = 89
'58–67 = 99
'68–77 = 100
'78–87 = 79

1886– 95 = 68
'87– 96 = 68
'88– 97 = 67
'89– 98 = 66
'90– 99 = 66
'91–1900 = 66
'92– '01 = 66

1893–1902 = 66
'94– '03 = 66
'95– '04 = 67
'96– '05 = 68
'97– '06 = 70
'98– '07 = 71
'99– '08 = 72

From the decade 1889-98 to the decade 1894-1903 the average of ten years had remained 66, the really lowest decade more closely calculated being 1890-99; the average for the last ten years has advanced to 72.

Silver remained very depressed throughout the year in consequence of the unfavourable conditions in the Far East, and early in December the price fell to 22*d*. per oz., only slightly above the lowest record price in November, 1902. The prices and index numbers compare as follows (60·84*d*. per oz. being the parity of 1 gold to $15\frac{1}{2}$ silver = 100) :—

	Price.	Index Number.		Price.	Index Number.
	d.			*d*.	
Average 1889–98 ...	$35\frac{1}{2}$	= 58·3	*Lowest* Nov., 1902	$21\frac{11}{16}$	= 35·6
,, '99–1908	$27\frac{1}{8}$	= 44·6	End Dec., 1904 ...	$28\frac{3}{8}$	= 46·6
,, '93	$35\frac{5}{8}$	= 58·6	,, Dec. '05	30	= 49·3
,, 1902	$24\frac{1}{16}$	= 39·6	,, Dec. '06	$32\frac{5}{16}$	= 53·1
,, '07	$30\frac{3}{16}$	= 49·6	,, Dec. '07	$24\frac{7}{8}$	= 40·9
,, '08	$24\frac{3}{8}$	= 40·1	,, Dec. '08	$23\frac{3}{16}$	= 38·1

Gold.—The production was estimated :—

	£	
1881–85	21,000,000	(average).
'86–90	23,000,000	,,
'91-95 ...	33,000,000	,,
'96–1900 ..	53,000,000	,,
1901– '05 . .	66,000,000	,,
'06	82,000,000	
'07 . .	84,000,000	
'08 .. .	88,000,000	(rough estimate).

The *Rate of Discount* in the three principal markets is shown in the following table:—

[Per cent. and two decimals.]

	London.		Paris.		Berlin.		Average of the Three Markets.	
	Bank Rate.	Market Rate.	Bank Rate.	Market Rate.	Bank Rate.	Market Rate.	Bank Rate.	Market Rate.
	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.
1895	2·00	0·80	2·10	1·59	3·14	2·02	2·41	1·47
1900	4·00	3·70	3·25	3·17	5·33	4·41	4·19	3·76
'02	3·30	2·96	3·00	2·43	3·32	2·19	3·21	2·53
'04	3·30	2·65	3·00	2·19	4·22	3 14	3·51	2·66
'05	3·00	2·61	3·00	2·10	3·82	2·85	3·27	2·52
'06	4·25	3·98	3·00	2·72	5·15	4·04	4·13	3·58
'07	4·90	4·49	3·47	3·40	6·03	5·12	4·80	4·34
'08	3·00	2·25	3·04	2·15	4·78	3·38	3·61	2·59

The average rates in 1895 were the lowest on record, those in 1907 the highest since 1873. The private rate last year was $1\frac{3}{4}$ per cent., and the Bank rate $1\frac{1}{5}$ per cent. lower than in 1907.

Review of the year.—The past year was highly unsatisfactory in nearly all branches of business, and the consequences of the American crisis and overtrading in many respects, of unfavourable crops and retrograde movements in general trade after a period of prosperity made themselves felt everywhere. The total external trade of this country (bullion omitted) had risen to 1,068,000,000*l.* in 1906 and to nearly 1,164,000,000*l.* in 1907; last year's result was 1,050,000,000*l.*, equal to a decline of 114,000,000*l.*, and even then the lower prices have not yet had their full effect. The trade showed a reduction of nearly 10 per cent., of which 6 per cent. was in quantity and 4 per cent. in value, while the index number of prices was reduced by nearly 9 per cent. Shipbuilding was very much lower, and the metal and engineering trades were considerably worse. Textiles suffered heavily, and in addition to the fall in prices there were the cotton lock-out and greatly reduced exports to the Far East.

With regard to the future much will depend on America whether the improvement there is superficial and local, or whether it is substantial enough to react on European trade, or, in other words, whether the American purchasing power will be strong enough to improve the movements on this side. The additional fall in the index-number in the course of last year amounted only to 5 per cent. (from 76·2 in December, 1907, to 72·3 in December, 1908), but it has reached what we may call, under present conditions, a moderate level. We cannot compare it with the times from 1887 to 1896, when the production of commodities was increasing, and the supply of gold was not yet anything like what it is now. No doubt the purchasing power of gold has fallen in late years, and we have now a different standard. The average of the ten years

1890-99 was only 66, of 1896-1905 68, and the average of the last ten years was 72, with a rising tendency. After the high years 1899-1900 it fell from 76·2 to 68·4, or about 10 per cent., but it required three years (1902-04) before a substantial rise could be recorded, and now it has receded from 82·4 to 72·3, or 12 per cent. The tone is certainly more hopeful, but it seems too early to expect another great development very soon, and if the improvement is gradual it will be more healthy.

The arithmetical mean of the forty-five index numbers, which is 73 in 1908 against 80 in 1907, has been subjected to the usual test of using the same index numbers of the separate articles, but calculating each article according to its importance in the United Kingdom on the average of the three years 1904-06. In this case the average is 74·2, against 77·4 in 1907. The fall is less important, and the average comes out even higher than the general index number. The reason is to be found in the large article coal, for which the fall was smaller, while the articles next in importance—wheat and beef—were even higher.

The price movements of the external trade of this country—total imports into the United Kingdom and exports of British and Irish produce—were as follows, 1873 called 111 in accordance with my index number (see the Society's *Journal*, 1905, p. 146):—

	Total Imports into United Kingdom and Exports of British and Irish Produce.			Ratio of Values. 1873 = 111.	
	Declared Value.	Value at Prices of Preceding Year.	Values at Prices in 1873.	British Trade.	My Arithmetical Index Numbers.
	Mln. £'s	Mln. £'s.	Mln. £'s.		
1873	626·0	—	626	111·0	111
'89	675·3	664·5	1,005	74·6	72
'99	749·7	724·7	1,241	67·1	68
1900	815·1	739·1	1,224	73·9	75
'01 ...	802·7	836·9	1,256	70·9	70
'02	812·4	831·9	1,302	69·3	69
'03	833·8	826·5	1,323	69·9	69
'04 ...	852·2	847·0	1,345	70·3	70
'05	895·3	889·6	1,408	70·6	72
'06 ...	983·7	940·9	1,480	73·8	77
'07	1,072·1	1,023·5	1,540	77·3	80
'08 ...	970·4	1,010·1	1,451	74·2	73

The third column at uniform prices shows the movements of quantities; while the total in 1907 was 146 per cent. higher than in 1873, last year's total was only 132 per cent. larger. The ratio of value of British trade gives exactly the same figure as found in the previously mentioned test, but it is probable that with steady prices in the present year the ratio based on *declared* values will be lower.

Construction of the Tables.

The Table of *Index Numbers* is based on the average prices of the eleven years 1867-77, and the index numbers have been calculated in the ordinary arithmetical way; for instance, English wheat:—

	s.	d.	
Average, 1867-77....	54	6	= 100, average point.
,, '55	74	8	= 137, or 37 per cent. above the average point.
,, 1908	32	–	= 59, ,, 41 ,, below ,,

The index numbers therefore represent simple percentages of the average point.

Certain articles which appear to have something in common have been grouped together, with the following result:—

		Example for 1908.	
		Total Numbers	Average.
1. Vegetable food, corn, &c. (wheat, flour, barley, oats, maize, potatoes, and rice)	With 8 Index Nos.	557	70
2. Animal food (beef, mutton, pork, bacon, and butter)..........	,, 7 ,,	623	89
3. Sugar, coffee, and tea	,, 4 ,,	191	48
1—3. *Food*	,, 19 ,,	1,371	72
4. Minerals (iron, copper, tin, lead, and coal)	,, 7 ,,	623	89
5. Textiles (cotton, flax, hemp, jute, wool, and silk)	,, 8 ,,	498	62
6. Sundry materials (hides, leather, tallow, oils, soda, nitrate, indigo, and timber)	,, 11 ,,	800	73
4—6. *Materials*	,, 26 ,,	1,921	74
General average	,, 45 ,,	3,292	73

The *general average* is drawn from all forty-five descriptions, which are treated as of equal value, and is the simple arithmetical mean as shown above.

*Average Prices of Commodities.**

No. of Article	0	1	2	3	4	5	6	7	8	1—8	9	10
		Wheat.		Flour.	Barley.	Oats.	Maize.	Potatoes.*	Rice.	Vegetable Food.	Beef.‡	
Year.	Silver.†	English Gazette.	American.	Town Made White.	English Gazette.	English Gazette.	American Mixed.	Good English.	Rangoon Cargoes to Arrive.	Total	Prime.	Middling.
	d. per oz.	*s.* and *d.* per qr.	*s.* and *d.* per qr.	*s.* per sack (280 lbs.).	*s.* and *d.* per qr.	*s.* and *d.* per qr.	*s.* per qr.	*s.* per ton	*s.* and *d.* per cwt.		*d.* per 8 lbs.	*d.* per 8 lbs.
1894	$28\frac{15}{16}$	22·10	23·6	22	24·6	17·1	20	70	5·10	—	47	37
'95	$29\frac{7}{8}$	23·1	25·6	23	21·11	14·6	$19\frac{1}{2}$	80	5·6	—	47	37
'96	$30\frac{3}{4}$	26·2	29	25	22·11	14·9	15	55	6·2	—	45	34
'97	$27\frac{9}{16}$	30·2	34·6	30	23·6	16·11	$14\frac{3}{4}$	70	6·9	—	47	36
1898	$26\frac{15}{16}$	34	37	33	27·2	18·5	$17\frac{3}{4}$	82	7·2	—	46	36
1899	$27\frac{7}{16}$	25·8	30	$26\frac{1}{2}$	25·7	17	18	70	7·2	—	49	40
1900	$28\frac{1}{4}$	26·11	31·6	$27\frac{1}{2}$	24·11	17·7	$20\frac{1}{4}$	78	7·4	—	51	42
'01	$27\frac{3}{16}$	26·9	30	$26\frac{1}{2}$	25·2	18·5	$22\frac{1}{4}$	78	6·7	—	49	42
'02	$24\frac{1}{16}$	28·1	30·6	26	25·8	20·2	25	69	6·2	—	54	47
'03	$24\frac{3}{4}$	26·9	31	27	22·8	17·2	22	84	7·3	—	48	42
1904	$26\frac{3}{8}$	28·4	33·6	$28\frac{1}{2}$	22·4	16·4	$21\frac{1}{2}$	90	6·7	—	48	42
'05	$27\frac{13}{16}$	29·8	34	$28\frac{1}{2}$	24·4	17·4	23	65	6·9	—	47	40
'06	$30\frac{7}{8}$	28·3	32·6	$26\frac{1}{2}$	24·2	18·4	22	67	7·3	—	47	40
'07	$30\frac{3}{16}$	30·7	36	29	25·1	18·10	$24\frac{1}{2}$	88	8·3	—	49	42
'08	$24\frac{3}{8}$	32	37·6	$31\frac{1}{2}$	25·10	17·10	$26\frac{3}{4}$	81	7·7	—	52	45
Average....												
1899-1908	$27\frac{1}{8}$	$28\frac{1}{4}$	$32\frac{1}{2}$	28	$24\frac{1}{2}$	18	$22\frac{1}{2}$	77	$7\frac{1}{8}$	—	$49\frac{1}{2}$	42
'88–97....	37	29	32	$27\frac{1}{2}$	$25\frac{1}{2}$	$17\frac{1}{2}$	$20\frac{1}{4}$	73	$6\frac{3}{4}$	—	47	$37\frac{1}{2}$
'78-87....	50	40	$43\frac{1}{2}$	$34\frac{1}{2}$	$31\frac{1}{2}$	21	25	102	8	—	$55\frac{1}{2}$	46
'67-77....	$58\frac{1}{2}$	$54\frac{1}{2}$	56	46	39	26	$32\frac{1}{2}$	117	10	—	59	50

Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.

Year.	0	1	2	3	4	5	6	7	8	1—8	9	10
1894	47·6	41	42	48	63	66	61	60	58	439	80	74
'95	49·1	42	46	50	56	56	60	68	55	433	80	74
'96	50·5	48	52	54	59	57	46	47	62	425	76	68
'97	45·3	55	62	65	60	65	45	61	67	480	80	72
'98	44·3	62	66	72	70	71	55	70	72	538	78	72
1899	45·1	47	54	58	66	65	55	60	72	477	83	80
1900	46·4	49	56	60	64	68	62	67	73	499	86	84
'01	44·7	49	54	58	65	71	68	67	66	498	83	84
'02	39·6	52	54	56	66	78	77	59	62	504	92	94
'03	40·7	49	55	59	59	66	67	72	72	499	81	84
1904	43·4	52	60	62	57	63	66	77	66	503	81	84
'05	45·7	55	61	62	62	67	71	56	67	501	80	80
'06	50·7	52	58	58	62	70	68	57	73	498	80	80
'07	49·6	56	64	63	64	72	75	75	82	551	83	84
'08	40·1	59	67	69	66	69	82	69	76	557	88	90

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* The annual prices are the averages of twelve monthly or fifty-two weekly quotations; potatoes of eight monthly quotations, January to April and September to December.

† Index numbers of silver as compared with 60·84*d.* per ounce being the parity between gold and silver at 1 : $15\frac{1}{2}$; not included in the general average.

‡ Meat (9—13), by the carcase, in the London meat market.

Average Prices of Commodities—Contd.

No. of Article }	11	12	13	14	15	9—15	16A	16B	17	18A*	18B*	18
	Mutton.		Pork.	Bacon.	Butter.		Sugar.			Coffee.		
Year.	Prime.	Middling.	Large and Small, Average.	Waterford.	Friesland, Fine to Finest.	Animal Food. Total.	British West Indian Refining	Beet, German, 88 p. c., f.o.b.	Java, Floating Cargoes.	Ceylon Plantation, Low Middling.†	Rio, Good.	Mean of 18A and 18B.
	d. per 8 lbs.	*d.* per 8 lbs.	*d.* per 8 lbs.	*s.* per cwt.	*s.* per cwt.		*s.* per cwt.	*s.* per cwt.	*s.* per cwt.	*s.* per cwt.	*s.* per cwt.	
1894	55	42	44	59	98	—	11¼	11¼	13¾	102	75	—
'95	58	44	37	54	93	—	10	10	12	98	74	—
'96	53	39	35	50	98	—	10¾	10½	12½	95	58	—
'97	55	41	44	59	94	—	9¼	8⅞	11	95	40	—
'98	52	37	45	58	95	—	9½	9½	11¾	92	32	—
1899	54	41	40	51	103	—	10½	10	12¼	90	31	—
1900	59	45	44	60	102	—	11¼	10½	12¾	75	40	—
'01	54	44	49	63	105	—	9¼	8½	10¾	70	35	—
'02	55	44	48	63	102	—	7¼	6¾	8½	70	31	—
'03	58	47	44	60	100	—	8½	8¼	9¾	70	30	—
1904	59	50	39	57	102	—	10¼	10¼	11½	75	37	—
'05	59	51	46	65	107	—	11	11¼	12¾	75	40	—
'06	60	53	49	65	110	—	8½	8⅝	10	75	39	—
'07	60	54	45	63	108	—	9	9½	10⅞	75	31	—
'08	58	52	43	62	114	—	9¾	10½	11½	66†	31	—
Average												
1899-1908	57½	48	44½	61	105	—	9½	9½	11	74	34½	—
'88-97....	56	43½	42	61	100	—	12½	12½	14¾	97	70	—
'78-87..	64½	53	49	71	116	—	17	18	21½	78	52	—
'67-77....	63	55	52	74	125	—	23	24	28½	87	64	—
Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.												
										*	*	
1894	87	76	85	80	78	560	48		48	117	117	117
'95	92	80	71	73	74	544	43		42	113	116	115
'96	84	71	67	68	78	512	46		44	109	91	100
'97	87	75	85	80	75	554	39		39	109	64	86
'98	84	67	87	78	76	542	40		41	106	50	78
1899	86	75	77	69	82	552	44		43	103	48	75
1900	94	82	85	81	82	594	46		45	86	63	74
'01	86	80	94	85	84	596	38		38	80	55	67
'02	87	80	92	85	82	612	30		30	80	48	64
'03	92	85	85	81	80	588	36		34	80	47	63
1904	94	91	75	77	82	584	44		40	86	58	72
'05	94	93	88	88	86	609	47		45	86	62	74
'06	95	96	94	88	88	621	36		35	86	61	73
'07	95	98	87	85	86	618	39		38	86	48	67
'08	92	95	83	84	91	623	43		40	76	48	62

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* Index numbers not included in the general average.

† East India good middling from 1908.

Average Prices of Commodities—Contd.

No. of Article	19A*	19C*	19B*	19	16—19	1—19	20A	20B	21	22	—	23
	Tea.				Sugar, Coffee, and Tea.		Iron.			Copper.		Tin.
Year.	Congou, Common. *d.* per lb.	Indian Good Medium. *d.* per lb.	Average Import Price. *d.* and dec. per lb.	Mean of 19A and 19B.	Total.	Food. Total.	Scotch Pig. *s.* and *d.* per ton	Cleveland (Middlesbrough) Pig. *s.* and *d.* per ton	Bars, Common. £ per ton	Chili Bars. £ per ton	English Tough Cake. £ per ton	Straits. £ per ton
1894	4¼	7⅛	9·59	—	—	—	42·8	35·9	4⅞	40	43	68
'95	4⅛	7⅞	9·63	—	—	—	44·5	36·1	4⅞	43	46	63
'96	4	7½	9·55	—	—	—	46·10	38·2	5	47	50	60
'97	4	7⅜	9·36	—	—	—	45·4	40·7	5¼	49	52	62
'98	4½	6½	9·13	—	—	—	47·2	42·2	5½	52	55	72
1899	5½	7¼	8·82	—	—	—	63·9	60·1	7¼	74	78	123
1900	5¼	6⅜	8·58	—	—	—	69·4	69·3	9	73	77	134
'01	4	5¾	7·67	—	—	—	53·9	45·5	6½	66	71	118
'02	3¾	5¾	7·20	—	—	—	54·6	49·3	6⅛	53	57	121
'03	4¼	6½	7·71	—	—	—	52·3	46·3	6¼	58	62	127
1904	5	6⅜	7·24	—	—	—	51·5	43·3	6⅛	59	63	127
'05	4¼	5¾	7·24	—	—	—	53·6	49·6	6½	70	74	143
'06	4	5¾	7·40	—	—	—	58·9	53·0	7¼	88	92	181
'07	5¼	7	8·13	—	—	—	63·6	55·7	7½	87	92	172
'08	5¼	6⅞	7·99	—	—	—	56·0	50·5	6¾	60	64	133
Average... 1899-1908	4⅝	6⅜	7¾	—	—	—	57½	52	6⅞	69	73	138
'88-97...	4½	8	10⅛	—	—	—	45	38½	5⅜	50	53	83
'78-87...	6¾	—	12¾	—	—	—	46	38	5½	55	60	89
'67-77....	11¼	—	17¼	—	—	—	69	60	8¼	75	81	105

Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.

	*		*									
1894	38	—	56	47	260	1,259	62	—	59	53	—	65
'95	37	—	56	47	247	1,224	64	—	59	57	—	60
'96	36	—	56	46	236	1,173	68	—	61	63	—	57
'97	36	—	54	45	209	1,243	66	—	64	65	—	59
'98	40	—	53	46	205	1,285	68	—	67	69	—	69
1899	49	—	51	50	212	1,241	92	—	88	99	—	117
1900	47	—	50	49	214	1,307	100	—	109	97	—	128
'01	36	—	44	40	183	1,277	78	—	79	88	—	112
'02	33	—	42	38	162	1,278	79	—	74	71	—	115
'03	38	—	44	41	174	1,261	76	—	76	77	—	121
1904	44	—	42	43	199	1,286	74	—	74	79	—	121
'05	38	—	42	40	206	1,316	80		79	93	—	136
'06	36	—	43	40	184	1,303	86		88	117	—	172
'07	47	—	47	47	191	1,360	92		91	116	—	164
'08	47	—	46	46	191	1,371	82		82	80	—	127

* Index numbers not included in the general average.

Average Prices of Commodities—Contd.

No. of Article	24	25A	25B	26	20—26	27	28	29A	29B	30A	30B	31
	Lead.	Coal.				Cotton.		Flax.		Hemp.		Jute.
Year.	English Pig. £ per ton	Wallsend Hetton in London. *s.* per ton	New-castle Steam. *s.* per ton	Average Export Price. *s.* and dec. per ton	Mine-rals. Total.	Midd-ling Ameri-can. *d.* per lb.	Fair Dhollerah. *d.* per lb.	St. Peters-burg. £ per ton	Russian, Average Import. £ per ton	Manila Fair Roping. £ per ton	St. Pe-ters-burg Clean. £ per ton	Good Medium £ per ton
1894	9⅝	16½	10	10·50	—	3 13/16	2⅝	32	33	22	24	12½
'95	10¾	15	8½	9·33	—	3 27/32	2¾	26	28	19	25	11
'96	11½	15	8	8·85	—	4 11/32	3 3/32	26	27	17½	25	12¼
'97	12⅝	15¾	8¼	8·98	—	3 29/32	3 1/32	24½	27	16	25	11
'98	13¼	16¾	10¾	9·92	—	3 5/16	2½	24	25½	27	25	11
1899	15⅜	18½	12	10·72	—	3 9/16	2¾	23	24½	41	27	12½
1900	17¼	23½	17½	16·75	—	5 15/32	4 3/16	35	30	39	28	14¼
'01	12¾	20	12½	13·86	—	4¾	3 15/32	38	39½	37	27	12¾
'02	11⅜	18½	11¼	12·29	—	4 27/32	3 11/16	32	37	43	27	12¼
'03	11¾	16½	10½	11·70	—	6·03	4⅛	32	36	36	27	13½
1904	12¼	16¼	9½	11·13	—	6·60	5	36	38½	38	28	14
'05	14¼	15½	9¼	10·56	—	5·09	4 5/32	32	35	39½	29	18½
'06	17½	16½	10½	10·90	—	5·95	4 13/16	33	37	41½	31	23½
'07	19½	19¾	14½	12·75	—	6·55	4 7/16	30	34	35	31	21
'08	13⅞	18	12	12·77	—	5·72	4 5/16	23	29½	24½	28	15½
Average.... 1899-1908	14½	18¼	12	12¼	—	5 7/16	4⅛	31½	34	37½	28	15¼
'88-97....	12	17¼	9⅞	10¼	—	4 11/16	3 5/16	28	28	28½	25	13
'78-87....	14	16¾	8⅝	9	—	6	4¼	33	34	35½	26½	15
'67-77....	20½	22	12½	12½	—	9	6¾	46	48	43	35	19

Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.

Year.	24	25A	25B	26	20—26	27	28	29A–29B	30A–30B	31
1894	47	75	—	84	445	42	39	69	59	66
'95	52	68	—	75	435	43	41	57	56	58
'96	56	68	—	71	444	48	46	56	55	64
'97	62	72	—	72	460	43	45	55	53	58
'98	65	76	—	79	493	37	37	52	67	58
1899	75	84	—	86	641	40	41	51	87	66
1900	84	107	—	134	759	61	62	69	86	75
'01	62	91	—	111	621	53	51	82	82	67
'02	55	84	—	98	576	54	55	74	90	64
'03	57	75	—	94	576	67	61	72	81	71
1904	60	74	—	89	571	73	74	79	85	74
'05	70	70	—	84	612	57	62	71	88	97
'06	85	75	—	87	710	66	71	74	93	124
'07	95	90	—	102	750	73	66	68	85	111
'08	68	82	—	102	623	64	64	56	67	82

Average Prices of Commodities—Contd.

No. of Article	32A	32B	33	34	27—34	35A	35B	35C	36A	36B	37A	37B
	Wool.			Silk.		Hides.			Leather.		Tallow.	
Year.	Merino, Port Phillip, Average Fleece.	Merino, Adelaide, Average Grease.	English, Lincoln Half Hogs.	Tsatlee.	Textiles. Total.	River Plate, Dry.	River Plate, Salted.	Average Import.	Crop Hides.	Average Import.	St. Petersburg, Y.C.	Town.
	*d.** per lb.	*d.* per lb.	*d.* per lb.	*s.* per lb.		*d.* per lb.	*d.* per lb.	*d.* and dec. per lb.	*d.* per lb.	*d.* per lb.	*s.* per cwt.	*s.* per cwt.
1894	11¾	5⅜	10⅛	10	—	5½	4¾	4·65	12½	13⅜	48	25½
'95	12	5⅝	12	10	—	7⅛	6¼	4·76	13½	13⅝	48	23
'96	13	6⅜	11½	10½	—	6¾	5½	4·89	13½	13⅛	48	21
'97	12¼	6	9⅝	10¼	—	6½	5½	4·93	13½	12¾	40	20
'98	13¼	6⅝	8¾	10½	—	7	6⅛	5·04	13½	13⅜	40	22
1899	17¼	8½	8¼	13	—	7⅜	6¼	4·94	13½	13½	—	25
1900	15¾	7⅞	7⅞	13	—	8⅛	6¼	5·31	14	13⅜	—	27½
'01	13	6¾	6⅞	10½	—	7½	6	5·34	14	13½	—	28
'02	15	7⅝	6¼	11	—	7⅝	6⅜	5·52	14	14½	—	32½
'03	16	8¼	7¼	13½	—	8	6½	5·75	14	15½	—	29½
1904	16	8	10⅛	12½	—	8¼	6¾	5·66	14	15	—	26½
'05	17¼	8¾	12⅜	12¾	—	9	7¼	5·98	14	15¼	—	26½
'06	18	9¼	13⅜	13¾	—	10	7¾	6·52	16½	16	—	30½
'07	18	9⅜	12¼	15¼	—	9¾	7⅝	6·98	16	17⅞	—	34½
'08	15¾	7⅞	8½	10½	—	8¼	5⅞	6·30	14½	17¼	—	30½
Average 1899-1908	16¼	8½	9⅜	12½	—	8⅜	6⅝	5⅞	14½	15¼	—	29
'88-97....	14	6½	10½	12	—	6⅛	5¼	5	13½	14¼	43	25½
'78-87 ...	18½	8⅜	11¾	15	—	8⅝	6¾	6½	15	17	41	35½
'67-77....	21¼	9⅞	19¾	23	—	9	7	6⅞	16	18¾	45	45

Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.

Year	32A	32B	33	34	27—34	35A	35B	35C	36A	36B	37A	37B
1894	55		51	43	424	64		—	78	—	82	
'95	57		61	43	416	84		—	84	—	79	
'96	62		58	46	435	77		—	84	—	77	
'97	59		49	45	407	75		—	84	—	67	
'98	64		44	46	405	82		—	84	—	69	
1899	83		42	57	467	85		—	84	—	56	
1900	76		40	57	526	90		—	87	—	61	
'01	62		35	46	478	84		—	87	—	62	
'02	72		32	48	489	87		—	87	—	72	
'03	78		37	59	526	91		—	87	—	65	
904	77		51	54	567	94		—	87	—	59	
'05	84		63	55	577	95			84		59	
'06	87		68	60	643	103			94		68	
'07	88		62	66	619	105			97		77	
'08	76		43	46	498	90			91		68	

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* Port Phillip fleece washed nominal since 1895, exactly in proportion with the value of clean wool.

Average Prices of Commodities—Contd.

No. of Article	38	39	40A	40B	41	42	43	44	45A	45B	35—45	20—45	1—45
	Oil.			Seeds	Petroleum.*	Soda.		Indigo.	Timber.				
Year.	Palm.	Olive.	Linseed.	Linseed.	Refined.	Crystals.	Nitrate of Soda.	Bengal, Good Consuming.	Hewn, Average Import.	Sawn or Split, Average Import.	Sundry Materials. Total.	Materials. Total.	Grand Total.
	£ per ton.	£ per tun.	£ per ton.	s. per qr.	d. per gall.	s. per ton	s. per cwt.	s. per lb.	s. per load.	s. per load.			
1894	24½	35	20¼	38	3⅞	42	9¼	5	36	44	—	—	—
'95	23	36	20¼	37	6	39	8¼	4¼	37	42	—	—	—
'96	22	30	17½	33	5½	42	8	4¼	40	44	—	—	—
'97	22	31	15	33	4¾	51	7¾	4	41	47	—	—	—
'98	23	32	16¾	36	5⅛	54	7¾	3½	42	47	—	—	—
1899	25	33	20	40	6¼	56	7¾	3½	40	49	—	—	—
1900	27½	36	30½	54	6¾	62	8	3½	41	56	—	—	—
'01	26	38	30	53	6½	65	9	3⅜	39	52	—	—	—
'02	27½	34	28	50	6¼	64	9¾	3¼	39	51	—	—	—
'03	28	33	21	39	6¼	64	9¾	3¼	39	54	—	—	—
1904	27½	32	16	33	6⅛	64	10¼	2⅞	36	51	—	—	—
'05	27	36	18	39	5⅝	64	11	2⅞	38	51	—	—	—
'06	30½	39	20¾	43	6⅛	64	11¼	3	40	55	—	—	—
'07	33	43	23½	44	6¾	64	11¼	3¼	40	57	—	—	—
'08	27½	43	22¼	45	6¾	61	10½	3⅜	36	53	—	—	—
Average													
1899-1908	28	36½	23	44	6 5/16	63	9⅞	3¼	39	53	—	—	—
'88-97....	24½	36	19½	39	5¼	52	8¾	4½	40½	44½	—	—	—
'78-87....	32½	40	23	46	6⅞	62	12½	6	47	47	—	—	—
'67-77....	39	50	30	60	12½*	92	14	7¼	60	54	—	—	—

Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.

Year.	38	39	40A–40B	41	42	43	44	45A–45B	35—45	20—45	1—45
1894	63	70	65	* 31	46	66	69	70	704	1,573	2.832
'95	59	72	64	48	42	59	59	69	719	1,570	2 794
'96	56	60	56	44	46	57	59	74	690	1,569	2.742
'97	56	62	53	38	56	55	55	77	678	1,545	2,788
'98	59	64	59	41	59	55	48	78	698	1,596	2.881
1899	64	66	67	50	61	55	48	78	714	1,822	3,063
1900	71	72	94	54	67	57	48	85	786	2,071	3,378
'01	67	76	92	52	71	64	47	80	782	1,881	3,158
'02	71	68	87	50	70	70	45	79	786	1,851	3,129
'03	72	66	67	50	70	70	45	82	765	1,867	3,128
1904	71	64	54	49	70	73	40	76	737	1,875	3,161
'05	69	72	63	45	70	79	40	78	754	1,943	3,259
'06	78	78	71	49	70	80	41	83	815	2,168	3,471
'07	85	86	75	54	70	80	45	85	859	2,228	3,588
'08	71	86	75	54	66	75	46	78	800	1,921	3,292

* Petroleum as compared with the average from 1873-77 only.

IV.—*Addendum on "Probable Errors of Frequency-Constants."*

By Professor F. Y. Edgeworth, F.B.A.

In my recent Paper on this subject, I derived from first principles of inverse probability the theorem that, of all formulæ for determining the parameter of a frequency-curve from a given set of observations, the one which is subject to the least probable error is one for which the mean square of proportional deviations is (in the notation, and under the conditions explained in the said Paper)—

$$1\Big/ n\left[\int_{-\infty}^{\infty}\frac{1}{y}x^2\left(\frac{dy}{dx}\right)^2dx-1\right].$$ [*]

But I did not verify this theorem, like the simpler theorem relating to "primary" constants,[†] by a more direct proof of wider propositions, "middle axioms" comprehended under the universal principle. I had to confess: "I still desiderate a *specific* proof, of the kind which Professor Love has supplied in the case of a primary constant, for theorems like the following: that (under the assigned conditions)—

$$\int_{-\infty}^{\infty}\frac{1}{y}x^2\left(\frac{dy}{dx}\right)^2dx-1>4\frac{\left(\int_{-\infty}^{\infty}x^2y\,dx\right)^2}{\int_{-\infty}^{\infty}x^4y\,dx-\left(\int_{-\infty}^{\infty}x^2y\,dx\right)^2}.\text{”}$$

I now supply this *desideratum*.

Observing that (under the given conditions)

$$\int_{-\infty}^{\infty}x\frac{dy}{dx}=-1,$$

we may re-write the left side of the above inequation thus:—

$$\int_{-\infty}^{\infty}y\frac{x^2}{y^2}\left(\frac{dy}{dx}\right)^2dx-\left(\int_{-\infty}^{\infty}y\frac{x}{y}\frac{dy}{dx}dx\right)^2.$$

Designating $\int_{-\infty}^{\infty}yf(x)dx$, the mean value of any function, $f(x)$, by the symbol $\{f(x)\}$, we may then re-write our thesis thus:—

$$\left[\left\{x^2\left(\frac{dy}{dx}\right)^2\right\}-\left\{x\frac{dy}{dx}\right\}^2\right]\cdot\left[\left\{x^4\right\}-\left\{x^2\right\}^2\right]>4\left\{x^2\right\}^2.$$

Now in general—

$$\left\{\left(f(x)\right)^2\right\}=\left\{f(x)\right\}^2+\left\{f(x)-\left\{f(x)\right\}\right\}^2.$$

Accordingly the left side of the last-written inequation is equal to—

$$\left\{\left[x\frac{dy}{dx}-\left\{x\frac{dy}{dx}\right\}\right]^2\right\}\cdot\left\{\left[x^2-\left\{x^2\right\}\right]^2\right\}.$$

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[*] *Journal of the Royal Statistical Society*, vol. lxxi (1908), p. 674.

[†] *Loc. cit.*, p. 664.

By Schwartz's theorem[*] this product

$$>\left\{\left[\mathrm{x}\frac{dy}{dx}-\left\{\mathrm{x}\frac{dy}{dx}\right\}\right]\cdot\left[\mathrm{x}^2-\left\{\mathrm{x}^2\right\}\right]\right\}^2$$

$$>\left\{\mathrm{x}^3\frac{dy}{dx}\right\}-\left\{\mathrm{x}^2\left\{\mathrm{x}\frac{dy}{dx}\right\}\right\}-\left\{\mathrm{x}^2\right\}\left[\left\{\mathrm{x}\frac{dy}{dx}\right\}-\left\{\mathrm{x}\frac{dy}{dx}\right\}\right].$$

Of these three terms, the first becomes (under the given conditions) $-3\{\mathrm{x}^2\}$; the second becomes $+\{\mathrm{x}^2\}$; the third vanishes. Therefore, the left side of the proposed inequation

$$>\left[-2\left\{\mathrm{x}^2\right\}\right]^2>4\left\{\mathrm{x}^2\right\}^2.$$

Quod erat demonstrandum.

The general theorem which comprehends the preceding proposition as a particular species may itself likewise be proved by a direct method free from the speculative character which attaches to inverse probability. For this purpose we no longer take our stand on a particular set of observations in order thence to remount *a posteriori* to the originating cause; rather we watch in prior experience[†] the distribution of observations and determine that function of which the several values, each formed from a large set of observations, hover with minimum dispersion about the true value of some constant represented by a symmetrical[‡] function of the observations. It is postulated that the law of frequency with which we have to do, say $y=\frac{1}{c}\mathrm{F}\left(\frac{x}{c}\right)$, fulfils all the conditions which have been enunciated as proper to a frequency-locus.[§] It is postulated also that the several values of the required function, say χ, fluctuate (approximately) according to the normal law of error, the number of observations entering into χ, say n, being large.

I. The first case is that in which the true value which χ represents is the magnitude of an object, or the mean size of an "organ," in short, a "primary constant."[‖] Let us begin[¶] with the supposition that χ belongs to the comprehensive class (of functions constituting averages) which is defined by the equation (solved for χ)

$$\Sigma\theta(x_t-\chi),\text{ or rather }\Sigma\theta\left(\frac{x_t-\chi}{c}\right),\ =0\,;$$

where θ is an arbitrary function, and Σ, as before, signifies summation extending from the first to the n^{th} observation. For instance, θ might be sum of terms each of the form $\mathrm{P}(x_t-\chi)^p$; where P is a constant. Remembering that, n being large, χ hovers close to that value, say x', with which it would coincide if n were (not merely large, but) infinite, let us employ a new symbol to denote difference between the actual and ideal Mean, or rather that difference relatively to the (given) parameter, c: say $\xi = \frac{(\chi - x')}{c}$.* Likewise put $\mathrm{x}_t = \frac{\mathrm{x}_t - x'}{c}$. Then the above-written equation of definition becomes $\Sigma\theta(\mathrm{x}_t - \xi) = 0$. Since ξ fluctuates normally with a modulus which is a small fraction, it is legitimate, for the purpose of determining the mean square of deviation, to expand in ascending powers of ξ and neglect powers above the first. We have thus—using the term *fluctuation* to denote mean square of deviation measured from the centre of gravity †—the following (approximate) equation:

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[*] *Loc. cit.*, p. 664. Or rather by the equivalent of Schwarz's theorem in terms of mean values; which is easily proved without the use of integration.

[†] Compare Laplace's distinction between observations "already made" and those "not yet made"; referred to *loc. cit.*, p. 509.

[‡] *Cf. loc. cit.*, p. 512.

[§] *Loc. cit.*, p. 663.

[‖] *Cf. loc. cit.*, p. 383.

[¶] The reader who prefers not to be hurried *in medias res* may begin in the manner proposed below, p. 86.

$$\text{Fluctuation of } \xi\Sigma\theta'(\mathrm{x}_t) = \text{Fluctuation of } \Sigma\theta(\mathrm{x}_t).$$

$$\big(\Sigma\theta'(\mathrm{x}_t)\big)^2 \cdot \text{Fluctuation-of-}\xi = \Sigma\theta^2(\mathrm{x}_t) - \big(\Sigma\theta(\mathrm{x}_t)\big)^2.$$

Replacing sums by integrals we may write, for the fluctuation of ξ,

$$\frac{\int\theta^2 \mathrm{y}d\mathrm{x} - (\int\theta\mathrm{y}d\mathrm{x})^2}{(\int\theta'\mathrm{y}d\mathrm{x})^2};$$

if the limits of integration are the extremities of the frequency-curve (whether they are, or not, at an infinite distance from the origin); where y designates what y becomes when the substitutions above specified are effected, and θ is short for $\theta(\mathrm{x})$. Now the second term of the numerator may be omitted, since it replaces the square of $\Sigma\theta(\mathrm{x})/n$, which by hypothesis and construction tends to zero, as n is indefinitely increased. Accordingly we have for the quantity that is to be minimised $\frac{\int\theta^2\mathrm{y}d\mathrm{x}}{\left(\int\theta'\mathrm{y}d\mathrm{x}\right)^2}$. A minimum will be secured if θ is such that, when it receives an arbitrary variation $\delta\theta$, the first term of variation vanishes while the second term is negative. When $\theta + \delta\theta$ is substituted for θ, the proposed expression becomes

$$\frac{\int\mathrm{y}\theta^2d\mathrm{x} + 2\int\mathrm{y}\theta\delta\theta d\mathrm{x} + \int\mathrm{y}(\delta\theta)^2d\mathrm{x}}{(\int\mathrm{y}\theta'd\mathrm{x})^2 + 2\int\mathrm{y}\theta'd\mathrm{x}\cdot\int\mathrm{y}\delta\theta'd\mathrm{x} + \int\mathrm{y}(\delta\theta')d\mathrm{x}^2}\cdot$$

Put P^2 for $\int\mathrm{y}\theta^2d\mathrm{x}$, and Q for $\int\mathrm{y}\theta'd\mathrm{x}$ (both definite integrals); and the above expression may be written, as far as the first term of variation—

$$\frac{\mathrm{P}^2}{\mathrm{Q}^2}\left[1\,.\,+2\frac{\int\mathrm{y}\theta\delta\theta d\mathrm{x}}{\mathrm{P}^2} - \frac{2\int\mathrm{y}\delta\theta'd\mathrm{x}}{\mathrm{Q}},\,..\right].$$

Now, $\int\mathrm{y}\delta\theta'd\mathrm{x}$, when integrated by parts, becomes—

$$\Big|\,\mathrm{y}\delta\theta\,\Big[_{-\infty}^{\infty} - \int\frac{d\mathrm{y}}{d\mathrm{x}}\delta\theta d\mathrm{x}\,;$$

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* The simplification effected by taking the parameter as unit is not essential to the reasoning.

† The term has been used by me elsewhere to denote *twice* the mean-square-of-deviation, the square of the modulus. (*Journal of the Royal Statistical Society*, Jubilee volume, 1885, p. 188.)

where the symbols $\pm\infty$ denote the extremities of the frequency-curve, and the limits of the integration are $\pm\infty$. By the conditions imposed on y,[*] the term outside the sign of integration vanishes. Thus, the above-written first term of variation may be put in the form—

$$\frac{P^2}{Q^2}\int\left[\frac{y\theta}{P^2}+\frac{\frac{dy}{dx}}{Q}\right]\delta\theta dx\ ;$$

the limits of integration being as before (and throughout in the sequel) $\pm\infty$. Equating to zero the expression within the square brackets, we have $\theta(x) \equiv -\frac{P^2}{Q}\frac{1}{y}\frac{dy}{dx}$.

This (functional) equation is satisfied by $\theta \equiv A\frac{1}{y}\frac{dy}{dx}$, where A is a constant; provided that the resulting values of P^2 and Q are consistent with the definition of these symbols.

$$\text{Now, } P^2(=\int y\theta^2 dx) = A^2\int\frac{1}{y}\left(\frac{dy}{dx}\right)^2 dx = \text{say, } A^2R.$$

$$\text{And } Q(=\int y\theta' dx) = A\int y\left(\frac{d}{dx}\frac{1}{y}\frac{dy}{dx}\right)dx = -AR.\dagger$$

$$\text{Accordingly } \frac{P^2}{Q} = -A, \text{ as it ought, if } \theta \equiv A\frac{1}{y}\frac{dy}{dx}.$$

To ascertain the sign of the second term of variation, substitute the form which has been found for θ in the expression for the proposed magnitude when varied by the substitution of $\theta+\delta\theta$ for θ. This expression may be written (when $\int yd\theta' dx$ is transformed, as above, by integration)—

$$\frac{P^2}{Q^2}\left[\frac{1+\frac{2}{R}\int\frac{dy}{dx}\delta\theta dx+\frac{1}{R}\int y\delta\theta^2 dx}{1+\frac{2}{R}\int\frac{dy}{dx}\delta\theta dx+\frac{1}{R^2}\left(\int\frac{dy}{dx}d\theta dx\right)^2}\right].$$

The second term of variation is evidently positive if the third term in the numerator of the above fraction is greater than the third term of the denominator (the first and second terms being equal); that is, if

$$R\int y(\delta\theta)^2 dx > \left(\int\frac{dy}{dx}\delta\theta dx\right)^2,$$

$$\int\frac{1}{y}\left(\frac{dy}{dx}\right)^2 dx\int y(\delta\theta)^2 dx > \left(\int\frac{dy}{dx}\delta\theta dx\right)^2;$$

which follows from Schwartz's theorem.

Instead of forming the second term of variation in accordance with the general rule, it is simpler, in the present case, to reason that, when θ is varied from the form which has been determined, the fluctuation of ξ becomes multiplied by a factor which is greater than unity. This reasoning holds good when, instead of an indefinitely small variation of θ, namely $\delta\theta$, we introduce an increment of any dimension, say, η. Thus the fluctuation of ξ corresponding to the value of θ, which has been determined, is not only a *minimum*, but also *the least possible.* The value of this fluctuation is $1/\mathrm{R}$, and the corresponding form of ξ is $\Sigma\frac{\mathrm{F}'(\mathrm{x})}{\mathrm{F}(\mathrm{x})}/-n\mathrm{R}$, where

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[*] Above, p. 82, paragraph 2.

† Account being taken of the condition that $\frac{dy}{dx}$ vanishes at the extremities.

$$\mathrm{R} = \int\frac{1}{\mathrm{F}(\mathrm{x})}\left(\mathrm{F}'(\mathrm{x})\right)^2 d\mathrm{x}.$$

For example, let

$$\mathrm{F}(\mathrm{x}) \equiv \frac{1}{\sqrt{\pi}}e^{-\mathrm{x}^2}.$$

Then

$$\xi \equiv -\Sigma 2\mathrm{x}/-n\int 4\mathrm{x}^2\frac{1}{\sqrt{\pi}}e^{-\mathrm{x}^2} \equiv \frac{\Sigma\mathrm{x}}{n}.$$

And for the fluctuation we have $\frac{1}{\mathrm{R}} = \frac{1}{2}$. These results are in accordance with well-known properties of the normal curve.

The form of χ, the original *quæsitum*, is found from ξ by returning to the original co-ordinates (putting $\chi = x + \xi c$, and $\mathrm{x}_t = x' + c\mathrm{x}$). The resulting form of χ has the same fluctuation as ξ, the minimum fluctuation $\frac{1}{\mathrm{R}}$, multiplied by the square of the parameter. Of all the forms of χ which fluctuate normally about x' when n is large (ever nearer to x' as n becomes larger), that form is the one which (for any assigned large value of n) has the least fluctuation. This conclusion is irrespective of the position on the abscissa of the (arbitrary) origin from which x is measured; it is irrespective, too, of x', the distance from that origin of the point fixed relatively to the curve of frequency about which the observations cluster.*

So far on the supposition that χ is defined by an equation of the form $\Sigma\theta(x_t - \chi) = 0$. But all mean values are not of this type. What if the defining equation is of the form

$$\Sigma\theta(x_r - \chi)\theta(x_s - \chi)\theta(x_t - \chi) = 0$$

where r, s, and t are to receive all possible integer values from 1 to n? The value of χ in terms of the observations $x_1, x_2 \ldots x_n$, obtained by the solution of this equation, is a mean value. No doubt; but it is not consistent with our hypothesis that the several values of χ (each obtained from a large set of observations taken at random) should fluctuate normally. For in order that a statistical quantity should fluctuate normally it must be presumed that it is at least approximately the sum of elements fluctuating independently; as I have maintained in a former Paper.† The elements which so fluctuate need not be, as there generally supposed, the very quantities to which the given frequency-functions relate. The elements which are added may be, as elsewhere shown,[*] *functions*, each of one of the independent elements for which the frequency-function is given. This condition is fulfilled by the supposition with which we started. The statistical quantity ξ is the sum of n elements each of the form $\theta(x_t)/\mathrm{A}$, where A is a definite integral which may be regarded as a constant. But the condition would not be fulfilled if $\xi = \Sigma\theta(\mathrm{x}_r)\theta(\mathrm{x}_s)\theta(\mathrm{x}_t)/\mathrm{B}$ (r, s, t receiving all possible integer values from 1 to n); the form of ξ which results from the suggested alternative definition of χ does not fluctuate normally. It appears then that, if χ is to be defined by the equation to zero of some symmetrical functions of the expressions $\theta(x_r - \chi)$, $\theta(x_s - \chi)$, &c., *only* the simplest symmetrical function, *the sum*, is here admissible. Other types of Mean which occur have to be rejected for the same reason.[†]

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* *Cf. loc. cit.*, pp. 501—502.

† *The Generalised Law of Error, Journal of the Royal Statistical Society*, 1906.

Or is it better to *begin* with the condition that χ is a normally fluctuating function of $x_1, x_2 \ldots x_n$. Whence $\frac{\chi}{c}$ is nearly, n being large—becomes more nearly as n is increased—of the form

$$\frac{1}{n}\left[\psi\left(\frac{x_1}{c}\right) + \psi\left(\frac{x_2}{c}\right) + \ldots + \psi\left(\frac{x_n}{c}\right)\right].$$

Or, as before, x being measured from the ultimate Mean x'

$$\xi \equiv \frac{1}{n}\left[\psi(\mathrm{x}_1) + \psi(\mathrm{x}_2) + \ldots + \psi(\mathrm{x}_n)\right].$$

As the expression on the right constitutes a Mean of the values $\mathrm{x}_1, \mathrm{x}_2 \ldots \mathrm{x}_n$, it follows that, if $\mathrm{x}_1 = \mathrm{x}_2 = \ldots = \mathrm{x}_n = \xi$, $\xi = \psi(\xi)$. It would appear therefore at first sight, that the function ψ must be identical with its variable! But it suffices that the equation $\xi = \psi(\xi)$ should hold good for *small* values of ξ; since as n becomes large the cases in which ξ is not small become so relatively few as to be negligible.[‡] Accordingly it is legitimate to expand ψ in ascending powers and neglecting those above the second, to put $\psi(\xi) = \psi(o) + \xi\psi'(o)$. Now $\psi(o)$ vanishes by hypothesis; and we may presume that $\psi'(o)$ does *not* vanish, since in dealing with Probabilities we are entitled to neglect *singularities*. We have thus to determine the form of the function ψ, $\xi \equiv \xi\psi'(o)$. Whence $\psi'(o) = 1$. This condition is satisfied by the general form $\psi(\xi) = \dfrac{\theta(\xi)}{\theta'(o)}$ where θ is an arbitrary function. We have thus $\xi = \dfrac{1}{n}\Sigma\dfrac{\theta(\mathrm{x}_t)}{\theta'(o)}$. This expression will not be sensibly altered* if for $\theta'(o)$, we substitute the Mean of $\theta'(\mathrm{x}_t)\big(= \theta'(o) + \mathrm{x}_t\theta''(o)\big)$. Whence, as before, we have $\xi = \dfrac{\Sigma\theta(\mathrm{x}_t)}{n(\int\theta' d\mathrm{x}}$.

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[*] *Loc. cit.*, p. 669, and reference there given.

[†] This reason excludes a general type which comprises the best known Means, viz.: $\phi^{-1}\left(\mathrm{M}\left[(\phi(x_1), \phi(x_2) \ldots \phi(x_n)\right]\right)$; where M is any Mean, *e.g.*, one of the type above adopted, ϕ is any function, and ϕ^{-1} its *inverse*. For example, if M denotes the Arithmetic Mean; when $\phi(x) \equiv x$ we have the Arithmetic Mean, when $\phi(x) \equiv \log x$ we have the Geometric Mean, when $\phi(x) \equiv \frac{1}{x}$ we have the Harmonic Mean. In general—excepting the particular case when the Arithmetic Mean is denoted, and the not general, though common, case, in which a Mean other than the Arithmetic may be expanded in powers (and products) of the several constituents (or of quantities each of which is a function of an independent observation functions thereof) in such wise as to be approximately a linear function of n independent variables—the above-written type of Mean does not fluctuate normally, for reasons given in the Paper on the *Law of Error, Camb. Phil. Trans.*, 1905, p. 120 *et seq.*

[‡] As to this reasoning, see p. 115 of the Paper referred to in the preceding note.

Altogether I submit that the definition of χ with which we started is a sufficiently general type of those symmetrical functions † of the observations with which we are concerned. Similar considerations are applicable to the problems which follow.

II. The second case is that in which χ, the sought function of the observations, represents the *parameter* of the frequency-curve to which the observations conform. It may be assumed provisionally ‡ that θ belongs to a class which is defined by the equation (solved for c)

$$\Sigma\theta(x_t) = \int\theta(x)\frac{1}{c}\mathrm{F}\left(\frac{x}{c}\right)dx.$$

where θ is an arbitrary function. This is a generalisation of the method commonly adopted, in the case where the frequency-function is normal, for determining the modulus from a given set of observations. Remembering that, n being large, c hovers close to that value—say, c', with which it would coincide if n were infinite—let us put $c = c'(1 + \kappa)$, and, likewise, $x_t - x' = c\mathrm{x}_t$.§ The equation of definition is then replaced by the following:—

$$\Sigma\theta(\mathrm{x}_t) = \int\theta(\mathrm{x})\frac{1}{1+\kappa}\mathrm{F}\frac{\mathrm{x}}{1+\kappa}d\mathrm{x} = \int\theta\big(\mathrm{x}(1+\kappa)\big)\mathrm{y}d\mathrm{x},$$

if, as before, we put y for F(x). Since κ is a statistical quantity fluctuating normally with a small modulus, it is legitimate, expanding in powers of κ and neglecting higher powers, to equate the fluctuation of $\Sigma\theta(\mathrm{x}_t)$ to the fluctuation-of-κ multiplied by the square of

$$\left[\frac{d}{d\kappa}\int\theta\big(\mathrm{x}(1+\kappa)\big)\mathrm{y}d\mathrm{x}\right]_{\kappa=0}.$$

Whence—

$$\text{Fluctuation-of-}\kappa \times \int \mathrm{x}\theta'(\mathrm{x})\mathrm{y}d\mathrm{x} = \text{Fluctuation of } \Sigma\theta(\mathrm{x}_t).$$

$$\text{Fluctuation-of-}\kappa = \frac{\int\theta^2\mathrm{y} - \left(\int\theta(\mathrm{x})\mathrm{y}\right)^2}{\left(\int\mathrm{x}\theta'(\mathrm{x})\mathrm{y}d\mathrm{x}\right)^2}.$$

This is the expression which is to be minimised. It should be observed that $\int\theta(\mathrm{x})\mathrm{y}$ does not now, as in the former problem, vanish.

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[*] n being large, Σx_t converging to zero, and θ being free from singularity.

[†] Exclusive of those averages which are not exactly *functions* of the observations; such as the *Median* and other Means depending on *Percentiles*. They are amenable to the general proof by way of inverse probability given in the main Paper (*loc. cit.*, pp. 507 and 668).

[‡] See below, p. 90.

[§] The simplification effected by taking x' as the origin is not essential to the reasoning.

Proceeding as before we find for the first term of variation

$$\frac{P^2-Q^2}{R^2}\left[2\int\left(\frac{\theta y-Qy}{P^2-Q^2}\right)\delta\theta dx-2\int\frac{xy}{R}\delta\theta' dx\right];$$

if $P^2=\int\theta^2 y dy$, $Q=\int\theta y dx$, $R=\int x\theta'(x)y dx$. Now $\int xy\delta\theta' dx$, integrated by parts, reduces to $-\int\left(\frac{d}{dx}xy\right)\delta\theta dx$, since the portion outside the sign of integration vanishes. We thus obtain for the first term of variation

$$\frac{P^2-Q^2}{R^2}2\int\left[\frac{\theta y-Qy}{P^2-Q^2}+\frac{\frac{d}{dx}(xy)}{R}\right]\delta\theta dx.$$

Equating to zero the expression within square brackets, we find

$$\theta\equiv Q-\frac{P^2-Q^2}{R}\left(1+\frac{x}{y}\frac{dy}{dx}\right).$$

This solution may be replaced by $\theta\equiv A\left(\frac{x}{y}\frac{dy}{dx}-1\right)$, where A is an arbitrary constant. For when this form is assigned to θ, we have, attending the conditions imposed on y,

$$P\left(=\int y\theta^2 dx\right)=A^2\left(\int\frac{x^2}{y}\left(\frac{dy}{dx}\right)^2 dx-2\int x\frac{dy}{dx}dx+1\right)=A^2(S+3),$$

if S is put for the definite integral $\int\frac{x^2}{y}\left(\frac{dy}{dx}\right)^2 dx$. Also

$$Q=A\left(\int\theta y dx\right)=A\int\left(x\frac{dy}{dx}-y\right)dx=-2A.$$

$$P^2-Q^2=A^2(S-1).$$

$$R=A\int xy\frac{d}{dx}\left(\frac{x}{y}\frac{dy}{dx}-1\right)dx$$

$$=A\int\left(x\frac{dy}{dx}+x^2\frac{d^2y}{dx^2}-\frac{x^2}{y}\left(\frac{dy}{dx}\right)^2\right)dx$$

$$=A(-1+2-S)=-(P^2-Q^2)/A.$$

Substituting these values of P, Q, and R in the expression above found for θ, we find that it is identical with the proposed equivalent.

Substituting the form which has been found for θ in the expression for the fluctuation of κ, we find that for this form of θ the fluctuation is $\frac{1}{S-1}$; and that when varied by the substitution of $\theta+\delta\theta$ for θ, this quantity becomes multiplied by the fraction

$$\frac{1+\frac{2}{A(S-1)}\int\left(x\frac{dy}{dx}+1\right)\delta\theta dx+\frac{1}{A^2(S-1)}\left(\int y\delta\theta^2 dx-\left(\int y\delta\theta dx\right)^2\right)}{1+\frac{2}{A(S-1)}\int\left(x\frac{dy}{dx}+1\right)\delta\theta dx+\frac{1}{A^2(S-1)^2}\left(\int\left(x\frac{dy}{dx}+y\right)\delta\theta dx\right)^2};$$

when $\int xy\delta\theta' dx$ is transformed as above, and $S-1$ is substituted for its equivalents, $(P^2-Q^2)/A^2$ and $-R/A$. This fraction may be shown to be an improper one. For, whereas the first and second terms in the numerator and in the denominator are identical, the third term of the numerator is greater than the third term of the denominator.

For, multiplying both numerator and denominator by $A^2(S-1)^2$, and writing out S explicitly, we have for the inequation which is to be proved—

$$\left(\int \frac{x^2}{y}\frac{dy}{dx}dx - 1\right) . \left(\int y\delta\theta^2 dx - (\int y\delta\theta dx)^2\right) > \left(\int \left(x\frac{dy}{dx} + y\right)\delta\theta dx\right)^2.$$

Replacing the "1" in the first parenthesis by its equivalent,

$$\left(\int y\frac{x}{y}\frac{dy}{dx}dx\right)^2,$$

as in the introductory investigation above,* and transforming both of the parentheses on the left by the principle there exemplified, we obtain, for the left side of the inequation,

$$\int y\left(\frac{x}{y}\frac{dy}{dx} - \int y\frac{x}{y}\frac{dy}{dx}dx\right)^2 dx \cdot \int y\left(\delta\theta - \int y\delta\theta dx\right)^2 dx.$$

By Schwartz' theorem this product is greater than

$$\left[\int \sqrt{y}\left(\frac{x}{y}\frac{dy}{dx} - \int x\frac{dy}{dx}dx\right) . \sqrt{y}\left(\delta\theta - \int y\delta\theta dx\right)dx\right]^2$$

$$> \left[\int \left(x\frac{dy}{dx} + y\right) . \left(\delta\theta - \int y\delta\theta dx\right)\right]^2$$

$$> \left[\int \left(x\frac{dy}{dx} + y\right)\delta\theta dx - \left(\int y\delta\theta dx\right) . \int \left(x\frac{dy}{dx} + y\right)dx\right]^2$$

$$> \left[\int \left(x\frac{dy}{dx} + y\right)\delta\theta dx - \left(\int y\delta\theta dx\right) . \left(-1+1\right)\right]^2$$

$$> \left[\int \left(x\frac{dy}{dx} + y\right)\delta\theta dx\right]^2. \quad \text{Q.E.D.}$$

This reasoning holds good if for $\delta\theta$ we substitute η, a *finite* addendum to θ. Accordingly, the fluctuation of κ, corresponding to the value of θ which has been found, is not only a *minimum*, but *the least possible.*

Returning to the original co-ordinates, we find for that combination of the observations which (equated to the corresponding integral) yields a value of c subject to the least possible proportional fluctuation, $\frac{1}{n}A\Sigma\left(\frac{xF'(x)}{F(x)} - 1\right)$.

For example let $y = \frac{1}{\sqrt{\pi}c}e^{-x^2/c^2}$. For $\Sigma\theta$ we have $\Sigma - A(2x^2+1)$; the observed value of which sum (divided by n) is to be equated to the integral $-A\int(2x^2+1)\frac{1}{\sqrt{\pi}c}e^{-x^2/c^2}dx$. Whence we obtain the well-known best determination of c. The (minimum) proportional fluctuation to which it is liable is in the above notation $\frac{1}{S-1}$, where

$$S = \int x^2 4x^2 \frac{1}{\sqrt{\pi}}e^{-x^2}dx = 3.$$

That is, the fluctuation (square of standard deviation) to which the determination of c is subject, is $c^2/2$. Which is in accordance with a well-known proposition.

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* Above, p. 81.

So far on the supposition that c is determined by equating the observed values of a sum such as $\frac{1}{n}\Sigma\theta(x_t)$ to the corresponding integral (involving c) calculated from the known form of the frequency-function. But what if c is determined by equating a symmetrical function other than a sum such as the Mean of $\Sigma\theta(x_r)\theta(x_s)\theta(x_t)$ to the corresponding integral calculable when the form of the frequency-function is known? The answer is that the so defined and other imaginable Means representing c would not fluctuate, as postulated, normally.

Or, following the analogy of the first problem, we may begin with the condition that the sought value of c, and accordingly that of κ, fluctuates normally. Accordingly κ is, approximately, of the form $\frac{1}{n}\Sigma\psi(x_t)$ where $x_1, x_2 \ldots x_n$ are several values taken at random from the series which conforms to the frequency-function $y = \frac{1}{1+\kappa}F\left(\frac{x}{1+\kappa}\right)$.* It comes to the same if for $\Sigma\psi(x_t)$ we substitute $\Sigma\psi\big(x_t(1+\kappa)\big)$, and take the observations from the series conforming to $y = F(x)$. We have thus $\kappa = \frac{1}{n}\Sigma\psi\Big(x_t(1+\kappa)\Big)$, for small values of κ. Whence

$$\kappa = \kappa\frac{1}{n}\Sigma x\psi'(x_t);$$

$$\frac{1}{n}\Sigma x\psi'(x_t) = 1.$$

This condition is satisfied by putting for $\psi(x)$, $\frac{\theta(x)}{\int x\theta'(x)dx}$, the form already adopted.

III. Analogous reasoning is applicable to other cases: the case which is compounded of the two preceding, the case in which a combination of observations in two dimensions stands for a coefficient of correlation, and more complicated cases relating both to primary and secondary constants.

Universally the combination of (n) observations that is subject to least fluctuation proves to be the same function whether sought *a posteriori* or by way of prior experience. It may be said that this identity is evident to those at least who are conversant with the first principles of Probabilities.† Yet, as far as I know, the theorem has not been clearly stated by the writers who have dealt with the Method of Least Squares. Nor, I think, is it so self-evident—considering how often appearances in Probabilities prove fallacious—as to render demonstration superfluous; especially as the general theorem comprehends particular propositions which are far from self-evident.

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* F being, as above, the given form of the frequency-function to which observations conform.

† As to the character of the evidence, see the Paper to which this "Addendum" relates. *Journal of the Royal Statistical Society* (1908), vol. lxxi, p. 507.

V.—*Real Wages and the Standard of Comfort since* 1850.

By George H. Wood.

So much work has been done by the Labour Department of the Board of Trade and by private investigators in the study of the variations of the Standard of Comfort during the nineteenth century, and particularly the last quarter of the century, that it seems eminently desirable to summarise the conclusions so far arrived at in such a form as to be a convenient starting point for further investigations and a handy compendium for those to whom the results are the raw material for their own special studies and inquiries.

To estimate the variations in the Standard of Comfort we need to know the variations in money wages, amount of employment, and prices of commodities (including rent).

Wages.

The method of measuring variations in average wages by means of index-numbers is now well-known; the first modern publication of such an index-number having taken place so long ago as June, 1895, when Mr. Bowley published, through the medium of the *Journal of the Royal Statistical Society*, the first of a series of estimates relating to special industries in particular, and to the wide group of wage-earners in general. The discovery of a much larger mass of material than formed the basis of the original estimate has led to revisions and amplifications, and several large industries have been treated in great detail. We have what may be regarded as final estimates of the course of average wages in building,[1] engineering,[2] shipbuilding,[2] and printing (compositors).[3] Mr. Bowley has also treated the woollen and worsted industries,[4] but that treatment is not, in my judgment, of equal value with the treatment of the other large industries named, because of the long periods between and the scanty nature of the information for some of the years for which figures were obtainable when Mr. Bowley made his estimate. These gaps have now been partly filled by inquiries made in the West Riding by the present writer during the past year, and it is hoped that after the publication of the Board of Trade's Wage Census with complete figures for 1906, Mr. Bowley's "conjectural" index-numbers may be revised and more firmly established. In the meantime I have split the numbers for this industry into two sets, one representing the woollen and worsted industries of Huddersfield and District (the two industries are hardly separable until the last twenty years, and are not now quite distinct, as some firms are engaged in both), and the worsted industry of Bradford. Leeds and the Heavy Woollen District are for the time being ignored.

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[1] *Journal of the Royal Statistical Society*, June, 1900, September, 1900, and March, 1901.

[2] *Ib.*, March, 1905, to March, 1906.

[3] *Ib.*, December, 1899.

[4] *Ib.*, March, 1902.

For agriculture I have used Mr. Bowley's Scottish figures,[5] but have used those of the late A. Wilson Fox as published in his second report on *Wages, Earnings . . . of Agricultural Labourers in the United Kingdom*,[6] brought up to 1907 in the Labour Department's Twelfth Abstract of Labour Statistics,[7] for both England and Wales. Probably neither the results of Mr. Bowley or Mr. Wilson Fox should be considered final, but those of the latter rest on the widest basis, particularly for Ireland.

The remainder are new, and my excuse for offering them is that, while not quite final, they are based on much more material than was available to Mr. Bowley in 1895, and, in the case of the furnishing trades, break fresh ground. That for cotton is based on an entirely new method, which discards for the time being detailed statements of earnings in separate occupations, but takes into account the average earnings of all the operatives engaged in the industry as estimated by Ellison (1819-21, 1829-31, 1844-46, 1859-61, 1880-82), Ure (1833), MacCulloch (1833), Gaddum (1861, 1871, 1881), the Wage Census (1886), Merttens (1891-93), and the *Labour Gazette* (1905-08). Intermediate years have been interpolated on the assumption that all increments due to increased speed of machinery, more machinery per operative, reduced proportions of children, &c., have been uniform and regular during these years, and allowances have been made for the reductions of hours in 1875 and 1902, and the general changes in the standard piece lists or scales. This skeleton material actually yields a comparatively sound result, as all the estimates, which were based on wide inquiries by the authorities I have named, can be reduced to a common basis. The numbers must, however, be regarded as preliminary and subject to revision when, later, this industry is treated in detail on the lines of the previous industries studied by Mr. Bowley in the articles named above.

The following table contains, therefore, estimates of the course of average wages in various industries since 1850, some of which are final and comparatively free from doubt. These have their source indicated in the previous footnotes. The others are not necessarily final, but are either revisions by the present writer only of numbers previously published or are published now for the first time:—

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[5] *Ib.*, September, 1899. Mr. Fox had since published some Scottish figures in the report named below, but the results they show do not materially differ from those of Mr. Bowley, and Mr. Fox's investigation was incomplete.

[6] Cd-2376, 1905.

[7] Cd-4413, 1908.

TABLE 1.—*The course of average wages in certain industries*, 1850-1906.

(1900 = 100.)

	1850.	1855.	1860.	1866.	1871.	1874.	1877.	1880.	1883.	1886.	1891.	1896.	1900.	1906.
Agriculture, England and Wales	64	76	76	80	84	94	95	92	92	90	93	93	100	101
" Scotland	50	63	60	60	71	85	93	85	83	87	91	95	100	103
" Ireland	60	61	67	71	77	80	84	86	87	90	93	97	100	110
Building	58	63	68	75	77	84	90	87	87	87	91	95	100	100
Printing	81	81	81	82	86	91	94	94	94	94	98	99	100	102
Shipbuilding	64	71	68	77	78	85	84	82	91	82	95	94	100	99
Engineering	67	74	73	77	80	87	87	82	88	84	93	96	100	102
Coal	62	87	71	93	74	100	71	67	72	67	93	81	100	90
Puddling	66	89	66	84	78	103	77	81	70	64	72	65	100	78
Cotton	54	59	67	74	80	84	88	82	86	86	91	95	100	106
Wool and worsted, Huddersfield	67	75	82	87	90	100	110	103	98	92	94	96	100	109
Worsted, Bradford	72	73	82	92	104	127	108	97	96	96	96	98	100	106
Gas	67	68	70	73	80	86	89	87	87	87	96	97	100	102
Furniture	66	68	71	78	81	91	93	92	92	91	94	95	100	100
Unweighted average	65	73	72	79	82	92	89	86	87	85	92	92	100	100
Weighted average (allowing for changes in numbers employed)	56	65	64	74	77	87	85	82	84	83	91	91	100	101

The final result—that is, the average—allowing for the changes in the relative number of persons employed in the various industries, is practically the same as that published by Mr. Bowley in the new edition of the *Dictionary of Political Economy*, article "Wages," and elsewhere, during recent years. Revision, by the introduction of new material, may alter the numbers for individual trades; but these alterations have been more or less compensatory, and the result over the period 1860-91 differs little from that published by Mr. Bowley in 1895.[8] The results from 1891 to 1900, however, rather differ, in so far as I do not find so great an advance during this period as that calculated by Mr. Bowley in the table quoted from him below, p. 100. The differences cannot be cleared up at this point, but the publication of the Labour Department's *Wage Census* will throw new light on the matter. The inclusion of railway servants, domestic servants,[9] the clothing trades, and one or two other large industries which we cannot, for want of material, trace in sufficient detail, would probably affect the final result; but it is improbable that the effect would be very great, as the numbers already included are so large.

[As the numbers for wages for later years than 1902 are not used in the calculations of Real Wages, owing to the absence of a second edition of the Board of Trade's Report on Prices, it may be useful to give them here.

Index numbers of average money wages, 1900-07.

	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
Full time	*100*	100	98	98	98	97	101	106
Percentage unemployed	2·9	3·8	4·4	5·1	6·5	5·4	4·1	4·2
Wages, allowing for unemployment	97	96	94	93	92	92	97	102

In 1908 an average reduction took place, of which we have not yet full details.]

Retail prices.

The index number of retail prices, given in the Appendix, is a first attempt at the construction of such an index number over half-a-century. The main source of the material is the Board of Trade's Report on *Wholesale and Retail Prices*, Cd–321, 1903; a table of prices in Staffordshire, given in Brassey's *Work and Wages*, p. 164; various short series and isolated statements given in the sources indicated in a paper by the present writer on "The Investigation of

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[8] *Journal of the Royal Statistical Society*, June, 1895, Table V.

[9] For domestic servants, see the article by Mr. W. T. Layton in the *Journal of the Royal Statistical Society*, September, 1908. The evaluation of a servant's food makes the inclusion of the index numbers difficult. This difficulty also applies to the wages of seamen.

Retail Prices,"[10] and some personal inquiries in Manchester, Bristol, Huddersfield, and elsewhere. The result is frankly experimental, but, in view of the addition to our information promised by the Board of Trade in the introduction to the Report above mentioned, it has not been thought necessary to publish the details at this stage. The method adopted has been simply to take the unweighted means of a series of index numbers for all commodities of ordinary consumption for which records are obtainable. The result has been checked by estimating independently at various periods the cost of a given quantity of various articles commonly used in artizan households. On the whole, this static method confirms the results arrived at by the dynamic method of index numbers; but, before the numbers can be considered as established, much more material is required, as well as a thorough discussion of method.

Rents.

If our information regarding retail prices is disproportionately small, that regarding rent is even smaller. One thing is certain, and that is, that a workman pays more money now than did his predecessor of half-a-century ago for housing accommodation. But he also lives in a larger and more convenient house, and, in addition, pays, through what is called his rent, for the education of his children, sanitation, police, water, libraries, parks and open spaces, infectious disease hospitals, and many other forms of municipal activity unknown to his great-grandfather. Part of the increase in rent is, therefore, the purchase price of a new set of conveniences, and is not an increase in the price of a given standard of housing accommodation. Generally speaking, the urban artizan of 1850 paid about 4*s.* per week for house rent; to-day, 6*s.* 6*d.* may be taken as a rough average.[11] At first sight it would appear that the whole of the 2*s.* 6*d.* increase is really payments for improvements in housing, or extension of municipal activity. Consideration of the fact, however, that urban land values have constantly tended upward, and that builders' wages and the cost of certain building materials have risen materially, indicates that to live now in an exactly similar house to that which an artizan occupied in 1850 would cost more money than then. [I ignore the increased cost of going to and from work, which should, in my opinion be added to the nominal rent to find the actual.] After consultation with several old-established builders in various towns, I have assumed that, of the increased expenditure on housing accommodation from about 4*s.* to about 6*s.* 6*d.*, one-half is due to an increase in rent as a price for a certain standard of accommodation, and the other half is due to the demand for a better article and for certain new features paid for under this one head. I have further assumed, what will be decidedly untrue in times of building inflation like 1871-77 and 1896-1900, as well as in the intense depression of 1879-87, that this increase has been constant and uniform. The effect of any error in these assumptions is, however, so small that it may, for all practical purposes, be ignored, if we are able to judge by the particulars given in the second fiscal Blue Book,[12] where the departure from uniformity of movement in the rents in certain large towns is found to be small, and the amount of the advance in average rental values of houses is, since 1880, about double what I have assumed to be the advance in rent as a price of a given standard of housing accommodation. It is of much less importance in this matter to have the actual figures than it is to allow sufficiently for the ascertained *tendency* of the cost of housing to advance. If the tendency is not allowed for, the resulting estimate of advance in the Standard of Comfort is greatly exaggerated. It would not matter if house rent were subject to similar fluctuations as the price of bread, meat, and other commodities.

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[10] *Journal of the Royal Statistical Society*, December, 1902.

[11] See the Report on the Cost of Living of the Working Classes. Cd-3864, 1908, p. 590.

Unemployment.

The further correction, that for the time lost in various years through unemployment, cannot be made, except for unemployment through industrial variations. Absence from, or loss of, work through sickness or personal inclination will probably tend to be, on the whole, constant from year to year, and may be ignored in comparisons; in any case we are forced to make this assumption. Of the other form of unemployment, viz., that caused through variations in the state of the labour market, the Board of Trade's "percentage unemployed in certain trade unions"[13] gives us a sufficiently accurate measure. Unfortunately a correction in the *Labour Gazette* of January, 1909, for the last ten years, leaves us in doubt as to whether or not a similar correction needs to be made throughout. In what follows this correction has been ignored.

We have now the material for an estimate of the variations in the standard of comfort for the period 1850-1902. Details for each year are given in the table in the Appendix, and the following table contains the details in quinquennial periods:—

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[12] Cd–2337, 1904, p. 43 and *passim*.

[13] *Ib.*, pp. 79—98; and *Twelfth Labour Abstract*, Cd–4413, 1908, p. 3.

TABLE 2.—*Detailed estimate of real wages at quinquennial periods.*

	1850-54.	1855-59.	1860-64.	1865-69.	1870-74.	1875-79.	1880-84.	1885-89.	1890-94.	1895-99.	1900-02.
(*a*) *For average operative.*											
Money wages, in shillings, if 1850 = 20*s.* (full work)	21·0	22·6	23·4	26·0	29·0	30·0	29·4	30·2	32·4	33·0	35·6
Percentage unemployed	3·7	6·4	5·8	5·5	1·9	5·8	4·4	6·8	5·3	3·6	3·7
Money wages, less lost time	20·2	21·2	22·0	24·6	28·4	28·2	28·0	28·2	30·6	31·8	34·2
Retail price index number (1850 = 100)	104	117	110	115	117	110	104	91	90	85	90
Cost of commodities (1850 = 16*s.*)	16·7	18·8	17·6	18·4	18·7	17·5	16·6	14·6	14·1	13·6	14·4
,, housing (1850 = 4*s.*)	4·1	4·2	4·3	4·4	4·6	4·7	4·8	4·9	5·1	5·2	5·3
,, commodities and housing	20·8	23·0	21·9	22·8	23·3	22·2	21·4	19·5	19·5	18·8	19·7
Real wages.											
(*a*) Full work	101	98	107	114	125	135	137	155	166	176	181
(*b*) With average lost time	97	92	100	108	122	127	131	145	157	169	174
(*b*) *For operatives of unchanged economic grade.*											
Money wages, if 1850 = 20*s.*	20·8	22·0	22·2	24·2	26·8	27·2	26·2	26·4	28·0	28·2	30·0
,, less lost time	20·0	20·6	21·2	22·8	26·2	25·6	25·1	24·5	26·5	27·1	28·9
Real wages.											
(*a*) Full work	101	96	102	106	114	122	122	135	143	149	152
(*b*) With average lost time	97	90	97	100	113	115	117	125	136	144	147

This table contains the gist of the whole matter. It is divided into two parts, the first relating to the "average" operative, or more properly, the "average" household. The constant tendency away from agriculture and the textiles, where the average earnings of all employed either through the low relative wages of the male (as in agriculture), or the large relative employment of lower-paid women and children, are low, towards the more highly-paid engineering, mining and building industries, has had, as is well-known, the effect of increasing the average earnings of all employed in industrial occupations more rapidly than the earnings in the occupations taken separately. Indeed, as may be seen in Table 1, only in the cotton trade, where there has been a constant diminution in the employment of children and young persons, as well as a constant tendency towards greater speed and efficiency and consequently greater earnings apart from advances in standard prices, have average wages risen as rapidly between 1850 and 1900 as in industrial Great Britain as a whole. Hence, the advance shown for the "average operative" is greater than that for an operative of a given standard grade. In other words, an agricultural labourer, a cotton "stripper or grinder," a woolcomber, fettler, or teazer, &c., is in each case better off than were his predecessors of 1850; but the industrial community as a whole is even still better remunerated as a result of their co-descendents having become miners, carpenters, shipbuilders, engineers, printers, or other comparatively well-paid artizans. For all this it is well worth while not to lose sight of the artizan or labourer who has not changed his grade, and to remember that the individual has not necessarily benefited in proportion with the community of wage-earners as a whole.

For convenience I have converted the index-numbers into terms of shillings and decimals, and applied the results to the (hypothetical but not untypical) operative earning 20*s.* a week in 1850 and spending 16*s.* of this on commodities, &c., and 4*s.* on rent. With this explanation the table explains itself, and for those who prefer to use the more hypothetical terms of index-numbers, the numbers may be easily converted with 1850 = 100.

By way of comment on the results here shown, it may be remarked that the average wages of the whole group of wage-earning families being taken at 20*s.* per week in 1850, becomes 35·6*s.* per week in 1900-02; or if we allow for lost time through average unemployment, the 21·0*s.* nominal average of 1850-54 became an actual 20·2*s.*, and in 1900-02, 34·2*s.* In the meantime, commodities costing 16*s.* in 1850, advancing rapidly in the Crimean war time, and not appreciably becoming cheaper than in 1850 until 1885-89, cost only 14·4*s.* in 1900-02. House rent, on the hypothesis explained above, has advanced from 4·1*s.* in 1850-54 to 5·3*s.* in 1900-02. Together, the advance was from 20·8*s.* in 1850-54 to 23·3*s.* in 1870-74, since when there has been a reduction to 19·7*s.* in 1900-02. These combined figures represent approximately the cost of living at a given uniform standard of comfort throughout. The most important line is, of course, the final combination of these results into "real wages." Ignoring the variations of employment, we find that the average standard of comfort advanced between 1850-54 and 1900-02 by 80 per cent. The following table conveniently summarises the movements in the chief periods:—

	Wages.	Prices and Rent.	Real Wages.
	Per cent.	Per cent.	Per cent.
1850-54 to 1873-77	+ 41	+ 11	+ 32
'73-77 „ '80-84	− 4	− 7	+ 3
'80-84 „ 1900-02	+ 21	− 8	+ 32
'73-77 „ '00-02	+ 17	− 14	+ 36
'50-54 „ '00-02	+ 70	− 5	+ 80

This, it should be observed, is the maximum progress, and has not been enjoyed by the operative whose industrial grade has remained unchanged. Taking a group of typical workpeople, *e.g.*, cotton spinners, weavers, carpenters, bricklayers, masons, building labourers, engine fitters, smiths, strikers, labourers, shipwrights, compositors, lithographers, cabinet makers, coalminers, puddlers, &c., &c., and making no allowance for the constant tendency to leave the ill-paid occupations for the more remunerative, we find that the advance of wages is nearly 50 per cent., and the reduction in the prices of commodities other than rent being almost counterbalanced by the advance in rent—the net advance is just over 50 per cent. The improvement in the Standard of Comfort due to the "shifting up" of industrial employment is therefore some 30 per cent., while the remaining 50 per cent. is due to advances of wages in the occupations considered separately and to the reduction in the cost of living.

There are two other recent calculations bearing on this matter with which the present results may be compared. In the second Fiscal Report, Cd–2337 of 1904, the Board of Trade publishes index-numbers of wages, prices of food, clothing, fuel and light, and of rent, with a combined index-number of cost of living. No index-number of "real wages" is given, but one can be easily calculated from the data given. The result is to indicate a somewhat larger advance in the standard of comfort since 1880 (the earliest year for which we have full details) than is shown in the present estimate. As, however, the Labour Department has revised its index-numbers of retail prices, and has only published the results from 1895, perhaps the earlier figures should be regarded as superseded, and we must wait until the Department publishes the details for earlier years before making estimates of real wages from its data.[14]

A more interesting and complete estimate, and one which on account of the novelty of its method cannot be ignored, is that by Mr. Bowley in the new edition of the *Dictionary of Political Economy.*[15] Mr. Bowley's estimate is as follows:—

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[14] See for this revision, Twelfth Labour Abstract, Cd–4413, 1908, pp. 90—91.

[15] Article, "Wages, Nominal and Real." I have to thank Messrs. Macmillan and Co., Ltd., for permission to reprint this table.

Estimate of real wages, 1850-1904.

Periods.	Index-Numbers of Nominal Wages. 1	One-third of Col. 1 assumed Unchanged in Purchasing Power. 2	Two-thirds of Col. 1. 3	÷	Index-Number of Food. 4	=	Purchasing Power of Col. 1. 5	Sums of Cols. 2 and 5. 6		Col 6 in Round Numbers.	Real Wages from Table 2.
1850–54	55	18	37	÷	1·21	=	31	49	Index-number of real wages	50	56
'55–59	60	20	40		1·40		28	48		50	54
'60–64	62	21	41		1·36		30	51		50	59
'65–69	67	22	45		1·40		32	54		55	63
'70–74	78	26	52		1·47		35	61		60	69
'75–79	80	27	53		1·41		37	64		65	75
'80–84	77	26	51		1·32		38	64		65	76
'85–89	79	26	53		1·06		50	76		75	86
'90–94	87	29	58		1·02		57	86		85	92
'95–99	92	31	61		0·95		64	95		95	97
1900–04	100	33	67		1·00		67	100		100	100

The method by which Mr. Bowley obtains the result in col. 6 is clearly indicated in the headings to the columns. The wages figures have been commented on above. For prices, Mr. Bowley used the Board of Trade's old index-number of food prices, and as it follows Sauerbeck's wholesale index-number for foodstuffs, has interpolated this from 1850 to 1876. These index-numbers Mr. Bowley has applied to two-thirds of the wages index-number, and assumed that the purchasing power of the other third has remained unchanged. The final result may be compared with that which is now being put forward by means of the added columns, and considering the absolute want of similarity of method, the results are surprisingly close. The equation of the results at 1900-04 and 1900-02 = 100 rather obscures the agreement as they converge in quite recent years. If the comparison be made by equating 1850-04, thus:—

	1850-54.	1855-59.	1860-64.	1865-69.	1870-74.	1875-79.
Bowley (column 6)	*56*	55	58	62	70	73
Wood (Table 2)	*56*	54	59	63	69	75

	1880-84.	1885-89.	1890-04.	1895-99.	1900-04.
Bowley (column 6)	73	87	98	109	114
Wood (Table 2)	76	86	92	97	100

the closeness until 1885-89 is seen to be remarkable. The departure since that time is due to the fact that the Board of Trade's index-number of food prices, on which Mr. Bowley relies, by including too few articles, shows a greater fall than would be yielded if a wider range of commodities was taken; and, on the other hand, as noticed above, to the greater advance in wages estimated by Mr. Bowley than is shown in Table 1. These differences, however, are not serious, as they do not obscure the general result, namely, that the Standard of Comfort of the British wage-earner is now, on the average, not less than 50 per cent., and probably nearer 80 per cent., higher than that of his predecessor in 1850, and that of this advance more than one-half has been obtained during the past quarter of a century.

The test of consumption of commodities.

In the *Journal* for December, 1899, I endeavoured to measure the advance in the standard of comfort by estimating the increase in the consumption per head of the population of the main articles of domestic consumption. The result was unmistakeably confirmatory evidence of the fact that the standard rose considerably between 1860 and 1896. These calculations have now been brought forward to 1902, and may be compared with the calculations as to real wages over the same period, as follows (equated at 1860-64 = 100):—

	"Real Wages."	Consumption of Commodities.		"Real Wages."	Consumption of Commodities.
1860-64....	100	100	1885-89...	145	137
'65-69 ...	107	110	'90-94 .	155	146
'70-74....	117	127	'95-99 ...	165	155
'75-79....	126	135	1900-02....	169	161
'80-84....	128	137			

The increase in the consumption of commodities is seen to be sufficiently large to justify our conclusions as to the increase in the standard of comfort. If wage-earners are not better off, they cannot consume more necessaries.

APPENDIX.—*Details, annually, of estimate of changes in real wages*, 1850-1902.

	Average Money Wages. 1850 = 100.	Average Retail Prices. 1850 = 100.	Percentage Un-employed.	Cost of			Money Wages. Assuming 20s. in 1850.		Real Wages.		For Workman of Unchanged Grade.		
											Money Wages.		
				Com-modities. 1850 = 16s.	Rent. 1880 = 4s.	Rent and Commodities 1850 = 20s.	Full Work.	Allowing for Unem-ployment.	Full Work. 1850 = 100.	Allowing for Unem-ployment.	Full Work.	Allowing for Unem-ployment.	Real Wages.
				s.	s.	s.	s.	s.					
1850	100·0	100·0	(4·0 ?)	16·0	4·0	20·0	20·0	19·2	100	96	100	96	100
'51	100	97	3·9	15·5	4·1	19·6	20·0	19·2	102	98	100	96	102
'52	100	97	6·0	15·5	4·1	19·6	20·0	18·8	102	96	100	94	102
'53	110	106	1·7	16·9	4·1	21·0	22·0	21·6	105	103	109	107	104
'54	114	122	2·9	19·6	4·1	23·7	22·7	22·0	96	93	112	109	95
'55	116	126	5·4	20·2	4·2	24·4	23·2	21·9	95	90	114	108	93
'56	116	126	4·7	20·1	4·2	24·3	23·2	22·1	96	91	114	108	94
'57	112	119	6·0	19·0	4·2	23·2	22·3	20·9	96	90	109	102	94
'58	110	109	11·9	17·4	4·2	21·6	22·0	19·4	102	90	107	95	99
'59	112	107	3·8	17·1	4·3	21·4	22·3	21·4	104	100	107	103	100
1860	114	111	1·9	17·8	4·3	22·1	22·7	22·3	103	101	109	107	99
'61	114	114	5·2	18·3	4·3	22·6	22·7	21·5	100	95	109	104	97
'62	116	111	8·4	17·8	4·3	22·1	23·2	21·2	105	96	110	101	100
'63	117	107	6·0	17·1	4·4	21·5	23·4	22·0	109	103	112	106	104
'64	124	106	2·7	16·9	4·4	21·3	24·8	24·1	117	113	117	114	110
65	126	107	2·1	17·1	4·4	21·5	25·2	24·7	117	115	119	116	110
'66	132	114	3·3	18·3	4·4	22·7	26·4	25·5	116	112	123	119	108
'67	131	121	7·4	19·4	4·5	23·9	26·1	24·2	109	101	122	113	102
'68	130	119	7·9	19·0	4·5	23·5	25·9	23·8	110	101	120	111	102
'69	130	113	6·7	18·1	4·5	22·6	25·9	24·2	115	107	120	112	106
1870	133	113	3·9	18·1	4·5	22·6	26·6	25·6	118	113	123	118	109
'71	138	113	1·6	18·1	4·6	22·7	27·5	27·1	121	120	127	125	111
'72	146	120	·9	19·2	4·6	23·8	29·1	28·8	122	121	135	134	114
'73	155	122	1·2	19·5	4·6	24·1	30·9	30·5	128	127	142	140	118
'74	156	117	1·7	18·8	4·6	23·4	31·1	30·6	133	131	143	140	122
'75	154	113	2·4	18·0	4·7	22·7	30·7	30·0	135	132	140	136	123
'76	152	110	3·7	17·6	4·7	22·3	30·4	29·3	137	131	139	134	124

Details, annually, of estimate of changes in real wages, 1850-1902—*Contd.*

	Average Money Wages. 1850 = 100.	Average Retail Prices. 1850 = 100.	Percentage Unemployed.	Cost of			Money Wages. Assuming 20*s.* in 1850.		Real Wages.		For Workman of Unchanged Grade.		
											Money Wages.		
				Commodities, 1850 = 16*s.*	Rent, 1880 = 4*s.*	Rent and Commodities 1850 = 20*s.*	Full Work.	Allowing for Unemployment.	Full Work. 1850 = 100.	Allowing for Unemployment.	Full Work.	Allowing for Unemployment.	Real Wages.
				s.	*s.*	*s.*	*s.*	*s.*					
1877....	151	113	4·7	18·0	4·7	22·7	30·2	28·8	133	127	137	130	120
'78....	148	110	6·8	17·6	4·7	22·3	29·5	27·5	132	123	134	125	120
'79....	146	103	11·4	16·5	4·8	21·3	29·1	25·8	137	121	131	116	123
1880...	147	107	5·5	17·1	4·8	21·9	29·3	27·7	134	127	131	124	120
'81....	147	105	3·5	16·8	4·8	21·6	29·3	28·3	136	131	131	126	121
'82....	147	106	2·3	16·9	4·8	21·7	29·3	28·6	135	132	131	128	121
'83....	149	102	2·6	16·4	4·9	21·3	29·8	29·0	139	136	132	129	124
'84....	150	100	8·1	16 0	4·9	20·9	30·0	27 6	144	132	132	122	127
'85....	149	96	9·3	15·3	4·9	20·2	29·8	27·0	148	134	131	119	130
'86....	148	92	10·2	14·7	4·9	19·6	29·5	26·5	151	136	130	116	132
'87....	149	89	7·6	14·2	5·0	19·2	29·8	27·5	155	143	131	121	136
'88....	151	89	4·9	14·2	5·0	19·2	30·2	28·7	157	149	131	125	137
'89....	156	91	2·1	14·6	5·0	19·6	31·1	30·4	159	155	135	132	138
1890....	163	91	2·1	14·6	5·0	19·6	32·5	31·8	166	162	141	138	144
'91....	163	92	3·5	14·7	5·1	19·8	32·5	31·4	164	159	141	136	142
'92....	162	92	6·3	14·7	5·1	19·8	32·3	30·3	163	153	140	131	141
'93....	162	89	7·5	14·2	5·1	19·3	33·3	29·9	167	155	139	129	144
'94....	162	87	6·9	13·9	5·1	19·0	32·3	30·1	170	158	139	130	146
'95...	162	84	5·8	13·4	5·2	18·6	32·3	30·4	174	163	137	129	147
'96....	163	83	3·4	13·3	5·2	18·5	32·5	31·4	176	170	139	134	150
'97....	166	86	3·5	13·7	5·2	18·9	33·2	32·0	176	169	140	136	149
'98....	167	87	3·0	14·0	5·2	19·2	33·4	32·4	174	169	143	138	149
'99....	172	86	2·4	13·7	5·3	19·0	34·3	33·5	180	176	146	142	153
1900....	179	89	2·9	14·2	5·3	19·5	35·7	34·6	183	177	152	147	155
'01....	179	90	3·8	14·4	5·3	19·7	35 7	34·3	181	174	150	145	152
'02....	176	91	4·4	14·6	5·3	19·9	35·2	33·6	177	169	148	142	149

NOTES ON ECONOMIC AND STATISTICAL WORKS.

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1.—*Principii di statistica metodologica.* By Professor Rodolfo Benini. 353 pp., 8vo. Turin: Unione Tipografico-Editrice, 1906.

Professor Benini philosophically distinguishes Statistics as a form of observation from Statistics as a form of induction. In connection with the first subject, he shows how to collect, digest, test, and otherwise work up the material given by experience. The first stage in the work of preparation is the collection of data and formation of primary tables. Among many excellent precepts sanctioned by experience, we have not space to notice more than one—a minor direction indeed, but characteristic of our author's attention to practical details. Suppose we have to arrange a set of numbers, *e.g.*, the numbers of illegitimate births in Italy, corresponding to a set of years; is it in general better to arrange the figures in two *columns* rather than two *rows?* The answer is, that the first arrangement is more readily taken in by the eye; perhaps owing to a habit contracted in the course of arithmetical operations, in which the figures are disposed vertically. But the horizontal arrangement, which obliges the eye to move somewhat slowly, and in some sort *per saltum*, is suitable when there is a discontinuity between the different degrees or classes into which the phenomenon is broken up.

In the preceding example we have an instance of a "series," which, according to our author's definition, consists of several statistical data relating to the same phenomenon and referred to successive times. With a series is contrasted a "seriation" (*seriazione*), which consists of several statistical data "expressing graduated variety of one and the same species, and accordingly referred to a determinate scale of measurement;" for instance, the distribution of territorial proprietors according to the extent of their property, of taxpayers according to the amount of taxation, of conscripts according to their stature, and so on. As we understand, a "seriation" is much the same as what English statisticians call a "frequency-curve."

Akin to, but not exactly identical with, seriation, is the tabulation of the frequency with which different combinations or permutations of two alternative phenomena occur. An example is afforded by the various arrangements of dactyls and spondees in the Latin hexameter. The frequency with which each arrangement occurs in the hexameters of the elegiac couplets written by Ennodius (Bishop of Pavia in the sixth century A.D.) are recorded in a local history of Pavia. It appears that, out of 493 hexameters, the arrangement which consists of 4 dactyls, designated dddd, occurs 11 times; ssss (4 spondees) occurs 40 times; dsss (the most frequent arrangement) occurs 109 times. Readers of this *Journal* will note with interest that the average frequency of dactyls, viz., 1·66 dactyls per 4 initial feet, is almost identical with the average given in the Jubilee number of the *Journal* (p. 211) for Virgilian hexameters, viz., 1·6 (which is in substantial agreement with Drobisch's observations, quoted by Mr. Harold Butler in his *Post-Augustan Poetry*, p. 123). The peculiarity noticed in the Jubilee volume, that the fluctuation in the proportion of dactyls to spondees is—not, as commonly in concrete phenomena, greater than, but—less than what it would be if the alternatives were distributed by pure sortition (batches of 4 feet taken at random from an immense congeries of dactyls and spondees mixed up in the observed ratio, about 2 to 3)—this interesting peculiarity is found by us to characterise the hexameters of Ennodius analysed by Professor Benini.

As may be surmised from the preceding example, our author is particularly happy in selecting distinguished instances—striking illustrations which rivet attention and clench the principle which is to be illustrated. Thus with reference to "the criticism and comparison of the primary data" he adduces the statistics of the proportion between male and female births in Sicily in different months for the years 1895, 1896 and 1897. In all the months except December for all three years the proportion of male to female births expressed as a percentage is in excess of 100. But in December there is a marked deficiency of male births; the percentages for the month in the three years are respectively 90·42, 86·58 and 88·41. Have we here a law of vital statistics? By no means. The deficiency of male births in each December is compensated by an excess of surplus in January; and the appearance of a physical law is explained by the civil law relating to conscription. Parents postdate the birth of their sons in order to postpone their liability to military service. The phenomenon reappears with regularity throughout a period of some twenty years during which the said law has been in force. The displacement is less marked in the case of *illegitimate* births: parents being presumably less solicitous about the welfare of illegitimate sons.

Among processes for simplifying and representing the results of observation [*Procedementi semplicative e rappresentativi*], a first place is held by arithmetical operations; including the construction of mean values. The author appears to us hardly to hold the balance fairly between the different kinds of *Means* when he says: "those which recur most frequently in practical use are the *arithmetic mean*, the *geometric*, and the *harmonic*;" while he mentions the Median very slightly. If any justification were needed for the importance which we attach to Median we might refer to the explanations given and authorities cited respecting that species of average in Dr. Žižek's impartial study of Mean Values (*Mittelwerte*).

Among *algebraic* processes *interpolation* is pre-eminent. It is employed in three different cases of which the first two are sufficiently indicated by the following problems: (1) "Given the Italian population in 1871, 1881 and 1901, to calculate what it ought to have been at each intermediate year, on the hypothesis that it has followed a parabolic law of movement"; (2) "given that the number of persons returned by the census [*i censiti*] between the ages of 20 and 25 was 200,000, that the number between 25 and 30 was 190,000, and that between 30 and 35 177,000, to calculate how many there probably were of the ages 20—21, 21—22, 22—23, and so on." The third variety of interpolation, "by far the most important," is "to discover from the empirical curve the true law of the phenomenon, or at least an expression as approximate as possible to that which ought to be the natural law of the phenomenon."

Under the first two heads the author appears, as far as we are able to form a judgment, to have made a judicious selection from the various methods of interpolation which have been suggested by mathematical theory and sanctioned by statistical practice. But under the third head he seems to us not to offer his readers a sufficiently wide choice of methods. We desiderate a recognition of the method according to which the sought constants pertaining to the assumed function are obtained from equations connecting the constants with the observed mean powers of deviation, or *moments*—the method described and improved by Professor Karl Pearson in a memorable contribution to *Biometrika* (vols. i and ii), and largely adopted by English mathematical statisticians.

It is true that this method of determining the constants is not particularly congruous with the form which Professor Benini assigns to the curve that is to be interpolated; a form which he prefers to the Pearsonian type of curve, on the ground that it "answers better to the ordinary exigencies of Statistics" (p. 233). Professor Benini, at the passage which we quote, refers to an earlier page (194, 195), where there is given the form $\log y = a + bx + cx^2$, with power to add to the number of terms ["anche portato ad un ulteriore stadio d'interpolazione," p. 233]; that is, as we understand, a term may be added involving the *third* power of x (and even one involving the fourth power), say, $gx^3(+hx^4)$. This form, in general, and with an exception to be noticed presently, does not lend itself readily to the calculation of *moments.*

This remark is applicable more decidedly, and without the exception, to a cognate form which is given in the context of the passage to which we are referred (see pp. 185—192), the curve which is presented when we substitute for x in the last-written equation $\log x$. We are not confined to the *second* power of $\log x$; we may have, for example, the equation of an interpolated curve (p. 331), $\log y = 6{\cdot}65967 - 0{\cdot}038129 (\log x)^3$. Professor Pareto's celebrated income-curve is a simple case of the general form described in this paragraph.

To account for the form of the income curve, Professor Benini proposes an ingenious hypothesis. He supposes the prolongation of the upper arm to be due to the continued action of inheritance; inheritors of property not starting fair in the race for income. The elongated curve of incomes "would thus result from a deformation of the binomial curve, due to the disturbing element of hereditary transmission of property. Accordingly, in a hypothetical collectivist society which suppressed the institution of inheritance, the distribution of wealth, with respect to numbers, would not retain its present form, but would more probably follow the well-known law of errors." The use of the income-curve as a weapon against the socialists would be impaired by this hypothesis.

Without pursuing the political consequences of the hypothesis, we shall employ it here only for the purpose of raising a question of considerable interest in the technique of Statistics. Accepting the hypothesis, and supposing, what is not a chimerical supposition, that statistics could be obtained for all sizes of income—in this country, for instance, not only as now, for the earnings of manual labour (*cf. Economic Journal*, vol. v, p. 674) and the income of the income-tax-paying classes, but also for the intermediate tract of income—would it then be advisable to represent the whole series of frequencies by a single analytic function; in particular, one of those which form the equation of Professor Pearson's types of frequency-curves? Would the statistical group—which we may assume to be unimodal, and to have a general resemblance to one of the Pearsonian types—be *homogeneous*, in such a sense as to render the employment of a unique function appropriate? Would such a comprehensive formula be more useful than a formula which is applicable only to the upper portion of the group? The question implies no disparagement to the eminent economist, who, in the absence of more complete statistics, has with distinguished success applied to the upper arm of the curve the formula which Professor Benini now reproduces.

We are not prepared to answer the deep question which we have raised. We speak with greater confidence about a more familiar species of homogeneous group, the case in which the normal error-curve—or, at least, an approximation thereto—prevails. It appears to us that Professor Benini's treatment of this case might have been improved by a reference to the theorems in Probabilities which bear upon the case. Thus, suppose that the curve of which the constants are to be determined is of the form $y = e^{a + bx + cx^2}$, and accordingly, $\log y = a + bx + cx^2$, with a corresponding expression for the *ordinary* logarithm of y. In this case we may, with Professor Benini, form the different values of $\log x$, and thence, by his process of interpolation, elicit the constants. But this is not the best way; for, if the "true law of the phenomenon" (in Professor Benini's just phrase, p. 157) corresponds to the formula which we have assumed (and if the coefficient of x^2 in that formula is negative), then it is demonstrable that the best values of the constants are obtained from the first and second powers of deviation, Σxy and $\Sigma x^2 y$, where the summation extends over the whole range of observations (and the sums may require some little correction, in order to represent *integrals*). By means of simple equations, connecting these data with the sought constants, the most probable, and in a more general sense the best, values of the constants are to be obtained according to well-known principles of Probabilities (referred to in the *Journal of the Royal Statistical Society* occasionally, in particular at pp. 384, 388, vol. lxxi, 1908). Even in respect of convenience, has Professor Benini's method in this case much advantage over the one prescribed by the Calculus of Probabilities?

It will be objected that "the natural law of the phenomenon" (Benini, p. 157) is perhaps not a normal error-function, but a neighbouring form; and that the way is open, on the system recommended by our author, to proceed to a nearer approximation by adding a term involving x^3 in the expression equated to $\log y$. But so is the way open on the system recommended by the Calculus of Probabilities. If the given group *approximately* corresponds to the normal law of error, there is a strong presumption that the appropriate treatment is that which Mr. Bowley has employed for unsymmetrical groups in his *Elements of Statistics* (Appendix to edition 2).

Again our author's treatment of correlation would have been improved by reference to the mathematical ground which underlies the received rule. And again—but this is not much more than a verbal criticism—to describe the coefficient of correlation (or "regression") as an index number (p. 247) does not seem to us a very happy classification.

Apropos of index numbers, we should call attention to the conception of a "composite index number" formed from the variations of several heterogeneous symptoms of economic progress

By way of illustration, Professor Benini puts together variations in (1) *nuptiality*, (2) the consumption of coffee, and (3) the financial situation. The conception was first broached by Professor Benini in the *Giornale degli Economisti*, 1892, and has since been developed by several Italian economists. Unable to follow our author into the literature of the subject, we shall confine ourselves to two queries: (1) If it is desired to combine heterogeneous variations, of which the relative weight cannot well be ascertained, into a single numerical index number, is not the simplest and best procedure to employ the Mean which our author slights, the *Median?* (2) Is it desirable to assume the appearance of numerical precision, or should we rather be content with the qualitative contrasts presented by the varying colours in M. de Foville's *Social Barometer* (Association Françoise pour l'avancement des Sciences, 1887)?

Statistics as a branch of inductive logic, the second part of the subject in the natural classification adopted by the author, is cultivated by him with distinguished success. No one has better apprehended the character of inductive logic in its application to Statistics. As usual, he illustrates general principles by apt examples. An instance of the Method of Agreement is afforded by the form of Professor Pareto's income-curve, remaining almost identical at different times and places and for every variety of nationality—agricultural and manufacturing peoples, protectionist and freetraders, Catholic and Protestant, semi-feudal and progressive. We have already adverted to our author's suggestion that the common cause underlying this common effect is not so much the ultimate principles of human nature, as the institution of inheritance. The Method of Difference, or, rather, the joint Method of Agreement and Difference, is illustrated by the inference that the preponderance of males of age 20—30 in (Italian) cities, compared with villages and small suburbs, is due principally to the existence of public offices, garrisons, and like institutions. A beautiful example of experimental methods combined with deductive reasoning is formed by the solution of a problem, of which the data are the number of marriages in each month during a period of thirty years, classified according to the day of the week with which in different years that month begins; and the *quæsitum* is the relative frequency of marriage on different days of the week. We are given, *e.g.*, that, for July in the period under observation, the Mean number of marriages in that month, according as it began with different days of the week, was as follows (we hope the case is one to which the *horizontal* arrangement is appropriate!):—

Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Sunday.
11·416	12·376	11·684	12·225	13·041	12·871	12·729

with similar data for certain other months (with the exception of those which may be disturbed by Lent). From these not very promising premisses is elicited the conclusion that the mean frequency, for the months under consideration, of marriage on the different days of the week, is as follows :—

Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Sunday.
320	332	255	835	64	860	1,073

Friday, which bulked large in the premisses, is rare in the conclusion, a rarity explicable by popular prejudice.

Professor Benini is well aware that, for the effectual use of inductive logic, there is required, not only a critical spirit, but activity of imagination. We cannot dispense with hypotheses; there is even something hypothetical in the bridge connecting that which is observed with that which is inferred. The use of hypothesis, not to say conjecture, in Statistics is illustrated by an investigation, of which the object is to discover the fecundity of married women (in Italy) at different ages. The numbers of married women living at the different ages are given; but there are not given the numbers of those who become mothers at each age, only the numbers of those who at each age die of puerperal fever, from which the proportionate numbers of mothers at each age are inferred, on the supposition that the fever is equally fatal to young and old. Similarly conjectural premisses are employed in order to determine the amount of mortgage debt in Italy, the proportions between income and patrimony, and other more or less important numerical results.

In his masterly applications of logic to Statistics, Professor Benini repeatedly employs the scheme of interpolation—the form of the interpolated curve, and the method of determining the constants—which on an earlier page he had described with approbation. It must be admitted that the success of his practice is calculated to recommend his methods. The issue whether these methods best "answer the ordinary exigencies of Statistics" may be a matter for deliberation, if we understand "ordinary" as conterminous with human affairs, to the exclusion of biology and physics. F.Y.E.

2.—*Die statistischen Mittelwerte. Eine methodologische Untersuchung.* Von Dr. Franz Žižek. 444 pp., 8vo. Leipzig: Verlag von Duncker and Humblot, 1908.

This is a most exhaustive treatment of the theory of the use of various kinds of averages, so far as they can be dealt with without mathematical analysis. Till one reads this book, one hardly realises the essential differences of conception in the applications of averages to different classes of data. Here, we may almost state, is a final analysis of the conditions under which the arithmetic average, the mode, and the median can, and have been, applied; there appears to be nothing more to say on the subject. The book is marked by considerable originality, by acute analytical power, by exact perception of the intentions and methods of a multitude of writers, and by an overwhelming thoroughness. There are practically no statistics between the covers; the illustrations are almost entirely given by references to the works of the best known statisticians, and it is interesting to notice the uniformity of the methods applied by different writers to similar problems, and at the same time to mark the special applications by the particular statisticians best known in each sphere of investigation. These methods are described in verbal detail in the text.

The arrangement of the book has involved a good deal of avoidable repetition. The first part, "Statistical averages in general," and the second, "The separate kinds of averages," cover very much the same ground; and, both in this and other respects, the treatment would be improved by a great deal of compression; there is no need for 120,000 words to complete both the analysis and the illustrations.

The author is careful to explain that he writes for non-mathematical readers, and is very successful, both in making the main part of his work intelligible to a skilled arithmetician, and in indicating the extension of the scope of means and allied measurements that mathematics can afford.

We think the work suffers from the absence of concrete examples and by the exclusion of all graphic treatment. If it is intended for the beginner in statistics, the actual handling of problems is more tangible and educative than pages of verbal description. For example, the effect of different grading in the tabulation of data is discussed, but it is difficult to see without graphic work how the facts concealed in too broad a grading can be recovered, and how too narrow a grading in other cases gives unnecessary numerical work. The methods of smoothing and of interpolation are evidently understood by the author, but are hardly conveyed to the reader. Again, we find too slight references to (and no illustrations of) the use of averages in the elimination of errors, and to the very important methods—the very basis of statistical science—by which accurate results can be disentangled from imperfect data. Similarly, there is little analysis of the precision actually attained or practically needed in common calculations. The geometric mean and the general consideration of ratio measurements deserve more than four pages in so elaborate a treatment. We do not agree that the accuracy of the mode and median are not influenced by the number of the observations, as the author seems to imply (p. 208). The criticism on p. 194 of the statement, that in forming index numbers the choice of year influences the weights assigned to the prices of particular commodities, appears to be based on a misunderstanding.

Apart from these details there is little to criticise, and there is much to admire. In particular, the rule of "greatest possible homogeneity," in groups which are to be treated by the methods of averages, is analysed, emphasized, and illustrated in a most informing manner; this section is the most nearly original in the book, and will, it may be hoped, form the basis of future treatment and practice. Again, the criticism and the exact placing in a reasoned scheme of the innumerable methods that have been applied, ignorantly or accurately, to the multitude of problems whose solution depends on the use of averages, is of great interest and value. The mere comparison of the technical terms current in German, French, Italian, and English is a useful piece of work. We notice that the illustrations are mainly from demographical, economic, and sociological problems, rather than from biological; and all those interested in such questions will find this an indispensable book of reference.

A.L.B.

3.—*Théorie du salaire et du travail salarié.* Par Christian Cornélissen. 704 pp., 8vo. Paris: V. Giard and E. Brière, 1908.

When an author criticises and sets aside with contumely existing and well credited theories, in favour of one which he holds to be new and valid, it is very frequently safe to prophesy, that he will be found to have misunderstood the body of theory he rejects, and that his own contribution is either the revival of an old fallacy or the promulgation of a new one. Such will probably be the verdict of theoretical economists on M. Cornélissen's theory of wages. This volume is the second of a series he proposes dealing with the whole sphere of economic science, and depends to some extent on the first, *Théorie de la Valeur.* Labour, he shows, differs in few essentials from other merchandise; in particular its price is influenced to a great extent by its cost of production, which does not equal its value in exchange; this cost and this value are the inferior and superior limits of its price, which is finally determined by the relative strength in bargaining power of the *entrepreneur* and the labourer. The equilibrium of demand and supply is a surface phenomenon, and cannot rank as a law of price. The theory of marginal utility is a pure figment of the brain, for an *entrepreneur* cannot know the separate value of the marginal labourer whom he hesitates to engage. The author appears not to have grasped the idea of the hypothetical equilibrium, which, like the mean level of the sea is never attained, but towards which forces are always tending, nor of the analysis of economic phenomena by means of equations of equilibrium, which are held to be sufficient when they equal in number the quantities which are to be determined; consequently he is not in a position to criticise the theories he endeavours to turn to ridicule. His own theory appears to postulate a standard of life normal to its *milieu* and time, but varying from town to country, from unskilled to skilled labour, from country to country, and from time to time. This standard is preserved by the force of custom and raised now and again by the growth of intelligence and power of organisation of the workmen. (His view of the efficacy of organisation in raising wages may be contrasted with that of M. Zolla noticed above.) He regards the wages, that permit the standard thus vaguely described, as the cost of production of the labour paid for. "Dire qu'un minimum d'entretien est établi par l'habitude et par le développement général du milieu n'est autre chose qu' affirmer l'existence d'une quotité minima *de frais de production* que l'entrepreneur capitaliste doit dépenser nécessairement pour acquisition de travail humain comme pour celle de matières premières, d'instruments de travail, &c." (p. 193). It is indicated that the particular standard, corresponding closely to the standard minimum of English trade-unionists, is very much what the workman likes to make it. No doubt there is a great deal of truth in the idea that a body of workmen can influence the standard at which they live, within certain limits, but it seems curiously inept to take this as the centre of a theory of wages, round which to group the more fundamental considerations, such as the productivity of labour, the number of workmen relative to capital, &c., which generally play so great a part in theoretical analysis.

The faults of the theory seem due rather to a wrong-headed perspective and to an insufficient analysis, than to ignorance of the facts. The author has considerable and wide-reaching knowledge of the facts of wages, and is never at a loss for an apposite illustration. His observation of the difference between wages of different groups, young and old, men and women, countrymen and townsmen, are singularly acute; we have not seen a better description of the causes that attract to the towns, nor a better comparision of the well-being of the town labourer with the agriculturist. Again, he brings to the front the great variability of wages from man to man in a single industry or even occupation, a variability which is daily becoming more evident as exact information accumulates, and which greatly increases the difficulties of the wage statistician. The analysis of the dangers of comparing real wages in different places and at different times is full of useful warnings, though he does not recognise the success with which in fact statisticians have overcome these obstacles.

The book is not statistical, but contains much of the matter on which statistics are based. A.L.B.

4.—*Leçons élémentaires sur le calcul des probabilités.* Par R. de Montessus. 191 pp., 8vo. Paris: Gauthier-Villars, 1908.

This volume is intended as an introduction to the study of the theory of probability. After a short explanation and definition of the meaning of "chance," a summary is given of the principal mathematical results required by the reader, the formulæ of permutations and combinations, the meaning of a definite and indefinite integral and of a differential coefficient, and a statement of Stirling's theorem. Chapter I then deals with principles and definitions and a few simple problems. In Chapter II the probabilities of compound events are considered, and the formula of the normal curve deduced. Games of chance, mathematical expectation, and geometrical probability are treated in the next two chapters, and the reader is then introduced to inverse probability and the theory of errors. In the last two chapters some applications are given to gunnery and to insurance respectively. The treatment is extremely lucid, but adapted rather to the general reader with some knowledge of mathematics than to the student of statistics, the majority of the illustrations and the special problems chosen being of too abstract a character to interest the latter greatly. Of the few paragraphs specially devoted by M. Montessus to statistics, indeed, the less said the better; he has clearly little sympathy with or knowledge of the aims and work of statisticians.

Several points in the volume are novel and interesting. The introductory section on the "logical definition of 'chance'" may be specially mentioned. It leads up to the following objective definition:—"Given that certain events possess a common character, and accordingly constitute a class, but differ from certain points of view, so that they may be assigned to well defined categories, *chance* consists in the absence of well defined relations between the causes of the assignment of a given event to a given category and the characters which are distinctive of that category." Another section which contained matter new to the present reviewer, though the results are cited from a work by a M. Journée, is that discussing the dispersion of shot from a shot gun, with choke-bore or ordinary barrels (Chapter VI).

On some points the treatment might, we think, be somewhat improved. It does not seem satisfactory to say that Bernoulli's law is "purely experimental," and to give no illustrations from experiment—illustrations from actual trial would help to carry conviction to the student, and might perhaps have suggested to the author that his statement of the law could be improved by the addition of the word *irregularly* after *tends*. The statement that "the ratio of the number of successes to the number of trials tends, as the number of trials is increased, towards the ratio of the number of favourable cases to the number of possible cases" is only true as an average result. In the section on errors of observation, one illustration is given of an actual distribution of errors, viz., some observations by Bradley of a certain interval of time. It seems clear, however, though nothing is said, that the observations have been subjected to some process of "smoothing"—it is incredible that if this had not been done the class frequencies on the plus and minus sides of the mean should have been exactly equal in eight cases out of ten, the difference in the remaining two cases being a single unit only! It also seems unwise to confuse the student by giving him an unpractical way of fitting the normal curve to a series of observations before proceeding to the more useful and practical way. Finally, in view of present knowledge, it does not appear justifiable to state that if a series of observations do not obey the normal law, as tested by the relations between the moment coefficients, "there is a strong presumption that the immediate results of experience have been altered." It would be quite impossible to convict an observer of, shall we say, *adjustment* of observations on such evidence. In the case of Bradley's observations, referred to above, we have indeed ventured to invert the test. G.U.Y.

5.—*Report of an inquiry by the Board of Trade into working class rents, housing, and retail prices, together with the rates of wages in certain occupations in the principal industrial towns of France.* 460 pp., folio. [Cd-4512.] 1909. Price 4*s.* 1*d.*

This volume completes the publication of the results of the stupendous inquiry undertaken by the Board of Trade into the cost of living to the working classes in the United Kingdom, France, and Germany. Never has any investigation done more to reduce to something like comparable conditions the infinite variations found in the lives of the common people of three great countries; although, as the compilers are careful to point out, no complete or exact comparison is entirely possible, and the results, so far as they appear comparable, must still be accepted with due caution. It is, however, difficult to estimate the greatness of the step which has been taken by this investigation—or, rather, series of investigations—in the direction of the statistical ideal in a branch of sociology, the interest of which to the economist is only surpassed by its importance to the nation.

The general plan of the present volume is identical with those of its predecessors, and anyone familiar with them will find no difficulty in looking up particular facts. As we have been taught to expect, the separate reports on each French town are mines of information; and it may be confidently anticipated that further scientific study of these reports will produce other valuable results in regard to each of the three countries. Meantime, the general report on each country provides ample material for those whose leisure does not admit of fuller reading, and the comparisons it indicates—attempted with a judicious combination of courage and caution—are broadly based, and open to criticism only on points of detail.

In the special report on Paris, valuable descriptions are given of the various artisan quarters, such as the Faubourg St. Antoine, Belleville, &c. There is in Paris a quinquennial census—as there ought to be in London. We find that the rate of increase in the Parisian population is declining to a greater extent than in London; and the same has to be said of the Extra-Paris population as compared with that of Extra-London. The same standard of overcrowding is applied to Paris as that used by the English Registrar-General, viz., more than two persons per room; and it appears that 14·3 per cent. of the population are overcrowded according to this standard, the corresponding percentage in London being 16. Paris is a city of large houses with numerous floors, in which the tenement system prevails; and the most numerous tenements are those of two and three rooms. An interesting item of information is the fact that many Parisians consume horseflesh as a matter of preference, and that in consequence it is no longer a cheap article of diet.

Among the other French towns we find Lille, Bordeaux, Bourges, Roubaix and Toulouse are either stationary or actually declining in population; and this condition often co-exists with a particularly low standard of wages. The wives and children add largely to the earning of French artizan households; there is little or no provision for washing at home, and the sanitary conditions are very poor as a rule.

As in the case of Germany, rent comparisons with this country are almost impossible in consequence of the different methods of local taxation. The figures of rent in the report are treated as excluding any element of taxation; but it seems very probable that the land tax and the tax on doors and windows—both paid by the landlord—find some representation in the occupier's rent. There is also a tax on the net rental value of buildings: but from this nearly all tenements worth less than 500 frs. per annum appear to be exempt. The predominant rents quoted for Paris are based on the actual rents of 4,148 tenements.

Food prices have been obtained by the usual inquiries in the various trades and by means of 5,065 family budgets, the index-numbers being weighted on the same system as employed in the United Kingdom and Germany. The following is a list of the commodities selected for the calculation of the index-numbers, and the quantities of each represent the weekly consumption of a typical French family:—

Coffee	0·6 lb.	Milk	4 quarts.
Sugar	$1\frac{3}{4}$,,	Beef	3 lb.
Eggs	10	Mutton	1 ,,
Butter	$1\frac{1}{4}$ lb.	Veal	$1\frac{1}{4}$,,
Potatoes	16 ,,	Pork	$\frac{3}{4}$,,
Bread	29 ,,		

The corresponding list for this country will be found on p. 210 of the *Journal* for March, 1908, and that for Germany on p. 529 of the issue for September last.

Tables are given reducing the various comparisons to a common basis, defined as the "approximate relative level of real wages," for each French town. A summary of these tables for the whole of the towns is as follows:—

Geographical Group.	Number of Towns in Group.	Mean Index-Numbers.		
		Rent and Prices Combined.	Wages of Skilled Men in Building, Engineering, and Printing Trades.	Approximate Relative Level of Real Wages.
Paris	1	100	100	100
Nord and Pas-de-Calais	6	91	67	74
Other northern towns	4	93	69	74
North-eastern towns	4	90	70	78
North-western towns	5	87	64	74
Central towns	7	87	71	82
Southern towns	3	100	70	70

It has been already suggested that comparisons between individual towns in the different countries might be more fruitful of satisfactory results than the attempt made by the Board of Trade to compare the countries themselves by means of incomplete figures reduced in most cases to a mean rather than an average. As a slight indication of the lines of comparison for which data are furnished by these invaluable reports, the following table of figures for London, Paris, and Berlin, based almost entirely on the reports themselves, will probably be of interest:—

	London.	Paris.	Berlin.
Population per acre (based on estimated population, 1905)	60·4	139·3	130·3
Birth-rate, 1905	27·0	18·8	24·6
Death-rate, 1905	15·1	17·6	17·1
Infant mortality per 1,000, 1905	130	111	206
Overcrowding (per cent. of population), 1901	16·01	14·3	—*
Predominant *rents* of working-class tenements of—			
2 rooms	*4s. 6d.—8s. 6d.*	*3s. 1d.—6s. 2d.*	*5s.—6s.*
3 ,,	*5s. 6d.—10s. 6d.*	*4s. 7d.—7s. 5d.*	*7s.—9s. 3d.*
4 ,,	*6s. 6d.—10s. 6d.*	*6s. 2d.—7s. 8d.*	—
Prices (1905).			
Bread 4 lbs.	*4d.—5½d.*	*6d.*	*4¾d.*†*—5½d.*‡
Beef (steak and thin flank omitted) lb.	*4½d.—10½d.*	*5¼d.—1s. 0¼d.*	*6½d.—11d.*
Pork lb.	*7d.—10d.*	*9½d.—1s. 1d.*	*7¾d.—9¾d.*
Bacon ,,	*7d.—1s.*	*9½d.—10½d.*	*8¾d.—1s.*
Sugar ,,	*2d.—2½d.*	*2¾d.—3d.*	*2½d.—2¾d.*
Butter ,,	*1s.—1s. 2d.*	*1s. 0¼d.—1s. 2d.*	*1s. 1d.—1s. 2¼d.*
Wages (per week).			
Building—			
Bricklayers and masons	*43s. 9d.*	*38s. 5d.*	*39s. 1d.*
Carpenters		*43s. 2d.*	
Painters	*35s. 5d.—37s. 6d.*	*38s. 5d.*	*29s. 5d.*§
Bricklayers' labourers	*29s. 2d.*	*24s.*	*25s. 8d.*
Engineering—			
Fitters	*39s.*	*33s. 7d.*	*30s.—33s.*
Labourers	*24s.* (*27s.*‖)	*24s.*	*20s.—23s. 7d.*
Boilersmiths	—	*33s. 7d.–38s. 11d.*	*31s. 1d.*
Printing—			
Compositors, machine, day	—	*45s. 7d.*¶	*35s. 2d.*
,, jobbing	*39s.*	—	*36s. 7d.*
Furnishing—			
Cabinetmakers	*41s. 8d.—43s. 9d.*	*43s. 2d.*	*36s.—38s.*
French polishers	*39s. 4½d.*	—	*29s.—34s.*
Upholsterers	*39s. 9d.*	*43s. 2d.*	*32s.—39s.*

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* Not stated, but severe among poor.

† Black.

‡ Grey.

§ Skilled.

‖ London County Council (minimum wage, maximum hours) as per Schedule.

¶ Minimum agreement-rate.

	London.	Paris.	Berlin.
Hours of labour (per week).			
Building—			
Bricklayers, masons, carpenters, painters, and bricklayers' labourers	50	60	53½
Engineering—			
Fitters Labourers Boilersmiths	54*	60	57—60
Printing—			
Compositors, machine, day	—	48	48
,, jobbing	—	—	54
Furnishing—			
Cabinetmakers, French polishers, upholsterers	50	60	52

* London County Council (minimum wage, maximum hours) as per Schedule.

It is impossible to close this short account of the results of a long and arduous service, without referring to the irreparable loss that the Civil Service and statistical science have sustained in the untimely death of the man who had most to do with it. There is a melancholy satisfaction to be derived from the appearance of his signature to this, the last of his completed works. These three volumes alone have entitled Arthur Wilson Fox to the gratitude of the entire nation; but the most enduring sentiments will be those inspired by him in his colleagues and friends of the Civil Service and the Royal Statistical Society. E.J.H.

6.—*Royal Commission on the Poor Laws and Relief of Distress. Report presented to both Houses of Parliament by command of His Majesty.* 1238 pp., folio. H.M. Stationery Office, 1909. [Cd-4499.]

It is not an easy task to give a brief summary of the contents of this voluminous report. The Commission was formed on 4th December, 1905, and the report is thus the result of three years' untiring labour. The chairman was Lord George Hamilton, and its members included the Bishop of Ross, Sir Henry Robinson, the Right Hon. Charles Booth (who was compelled by ill-health to retire before the completion of the report), Sir Samuel Provis, the Rev. T. G. Gardiner, the Rev. L. R. Phelps, Prebendary Russell Wakefield, Dr. Downes, Dr. C. S. Loch, Professor Smart, Mr. Macdougall, Mr. Bentham, Mr. Lansbury, Mr. Hancock Nunn, Mr. Chandler, Mrs. Bosanquet, Mrs. Sidney Webb and Miss Octavia Hill. It represented, therefore, not only a great amount of practical experience and theoretical knowledge acquired by deep and patient study, but also a great variety of opinion and of interest.

So constituted, it is certainly satisfactory that as many as fourteen of the eighteen Commissioners signed the report (subject, in five cases, to memoranda upon certain details of it), and that even the four who could not do so, but made a separate report, agreed with their colleagues in many of their recommendations.

After the usual preliminary matter, the report contains a statistical survey of Poor Law problems, with diagrams illustrating the seasonal changes in pauperism, the fluctuations in the total number of paupers compared with the population and the distribution of paupers according to age and sex. These lead to the unpleasant conclusion that, notwithstanding our assumed moral and material progress, and notwithstanding the enormous annual expenditure, amounting to nearly 60,000,000*l.* a year, upon poor relief, education, and public health, we still have a vast army of persons quartered upon us unable to support themselves, and an army which in numbers has recently shown signs of increase rather than decrease. That increase, however, has not exceeded the increase in the population.

The report next contains an historical sketch of the Poor Laws down to 1834, including an excellent summary of the report of the famous Commission of 1832; this is followed by a statement of the historical development and the present condition of the various branches of the Poor Law, leading up to the 239 recommendations made by the majority of the members of the present Commission.

They propose that the division of the Local Government Board which has hitherto dealt with the relief of the poor shall be called the Public Assistance Division; that the central authority should assume a more direct position of guidance and initiative in regard to the local authorities; that the general inspectors should have the help of assistant inspectors; and that the audit staff should be increased. The report of the minority of the Commissioners recommends the establishment of officers to be called Registrars of Public Assistance and of a department to be called the Ministry of Labour.

With regard to local administration, the Commission suggests the substitution for the guardians and magistrates of a public assistance authority, largely nominated from amongst men and women of experience, wisdom, and unselfish devotion to the public good. The minority agree with the proposal for abolishing Boards of Guardians, but "not from any lack of appreciation of the devoted public service gratuitously rendered by tens of thousands of men and women of humanity, ability, and integrity, which has never received adequate recognition," and for substituting the County and County Borough Councils, so strengthened as to be able to undertake the duty of administering public assistance in addition to their present functions.

To provide an efficient staff of paid officers, it is recommended that no person should be appointed as clerk who has not knowledge and experience of the Poor Law, no person as superintendent of an institution who has not had experience in dealing with the classes contained in it, no person as a relieving officer who has not had previous training or obtained a certificate of competence, and the like as to minor offices: for which purposes qualifying examinations should be set up, and a graded public assistance service established.

It will thus be seen that both Reports agree in rejecting the *ad hoc* principle of election and devolving the duty of local administration upon the County and County Borough Councils. Dr. Downes and Miss Octavia Hill, in separate memoranda, dissent from this view; and we think that there is no doubt that those Councils have already more functions than they can well discharge. Hence, every addition to those functions must render necessary sooner or later an addition to the number of their members, already rather unwieldy. Large administrative bodies are not the best for efficient and speedy work and tend to dissipate the sense of responsibility. It is true that the Commissioners propose to meet these difficulties by a liberal power of co-optation, but that method is not always satisfactory, and has not the representative character of the *ad hoc* system. Mr. Hancock Nunn, in a very able memorandum, extending over forty pages, developes an alternative plan.

Incidentally to this branch of the subject, the Commissioners recommend that the existing Unions should be merged in larger areas, and that the system of grants-in-aid from the Exchequer should be modified. In this the minority also concur.

The Commissioners hold that further powers of detention are necessary, especially as regards "ins-and-outs," and that the life of aged inmates should be made comfortable and, as far as possible, cheerful. In the principle of this, also, the minority agree.

In the matter of out-relief, it is recommended that the case-paper system should be universally adopted, and that there should be systematic co-operation between the public assistance authorities, the recognised voluntary aid committees, and the sanitary authorities.

In dealing with the aged, sub-division into classes as far as practicable is recommended, and the system of small homes such as has been instituted in Hull and Woolwich is approved, on grounds both of economy to the ratepayer and increased happiness to the person relieved.

In Mrs. Bosanquet's excellent summary of the Poor Law Report of 1909, explaining the defects of the present system and the principal recommendations of the Commission, so far as relates to England and Wales (Macmillan and Co., 1909), she observes that "for the aged and those permanently incapacitated for work, there is seldom any prospect of regaining their independence if they have once become dependent upon poor law relief. By degrees a certain number of the old will be transferred to the list of pensioners, but this is only transference from one form of public assistance to another; and old age pensions will not affect those who are permanently invalided at an earlier age. The only method by which this class can be helped to retain independence is by a scheme of invalidity insurance which would cover all inability to work, whether due to sickness or old age, up to the pension age." She points out, very justly, the difficulty arising from the want of accurate statistics on this subject. The Commissioners themselves state that the information they have obtained is not sufficient to enable them to make specific recommendations upon it. None of the foreign systems of insurance exactly meets the case, and generally those schemes have not been long enough in operation to enable a sound judgment to be formed as to their success. The foundations of any future legislation ought to be very closely scrutinised. The minority are also unable to recommend the establishment of any plan of Government or compulsory insurance against unemployment. With regard to both these problems—invalidity and unemployment—the existence of voluntary organisations, carrying on their operations in a manner that is in consonance with English modes of thought, and is looked upon with pride by ourselves, and with admiration by foreign students of economic science, is an element to be considered. Both wings of the Commission, we are sorry to see, incline to the expedient of a State subsidy to these voluntary organisations, a method which may present some attractions to them, but would probably, in the end, do them more harm than good. In other respects, the Commissioners base their scheme of reform on a provident foundation, as in the case of medical assistance. They propose that the British Medical Association be requested to suggest a general scale of fees and wage limit, to be applied by their local branches, so that the services of all competent medical practitioners in a locality may be enlisted for the members of provident dispensaries, and that those agencies may be strengthened. They also recommend that the Public Assistance Committee may enrol aged persons and widows with young children as members of a provident dispensary, and pay the necessary fees, and that membership of such a dispensary shall entitle a patient to admission to a local Public Assistance Infirmary, or, if practicable, to a voluntary or general hospital.

In the same spirit of co-operation and co-ordination the Commissioners deal with the subject of charities in an exhaustive review which occupies eighty pages. They propose the establishment of voluntary aid councils and committees in each county and county borough, on which registered charities should be represented. The functions of these committees should be to aid persons in distress whose cases do not appear to be suitable for treatment by the public assistance committee and persons whose cases are referred to them by that committee. A system of registration of charities under the Charities Commission, now called the Charity Commission, but henceforth to be attached to the Local Government Board, is propounded on lines similar to those of the registration of Friendly Societies under the Friendly Societies Act. The Commissioners have noted the fact that Benevolent Societies are already entitled to registry under that Act, and have stated at length the effect of that registry. The minority report, in discussing the question of charities, notes their effect in undermining what is there called a penal poor law. That report deals in a thorough manner with the question of unemployment, to which it devotes 115 pages. The Ministry of Labour, which is there proposed to be created, is to have six divisions—a national labour exchange, a trade insurance division, a maintenance and training division, an industrial regulation division, an emigration and immigration division, and a statistical division. The majority report likewise discusses that subject in great detail, but with less reliance upon the intervention of the State. It contains recommendations as to education, labour exchanges, casual labour, insurance, voluntary aid, public assistance and transitional measures, and lays down as general principles governing public assistance to the able-bodied that efficiency and inefficiency cannot be allowed to work side by side at the same rate of pay, and that restoration to independent habits of life should be an ever-present consideration. For these purposes a scientific classification of those requiring relief is absolutely necessary. In this principle the minority concur. Dr. Loch and Mrs. Bosanquet, in a separate memorandum, offer a much needed warning lest methods proposed to meet exceptional distress during the period of transition should become permanent methods of procedure.

All these considerations lead up to the recommendation which is really the central point of the whole report: the abolition of the workhouse, and the substitution for it of a number of properly graded institutions, dealing separately with the various kinds of relief that are required. Seven such institutions are enumerated: those for children, for the aged and infirm, for the sick, for able-bodied men, for able-bodied women, for infants, and for the feeble-minded and epileptic. In noting the curious approximation, in this and other respects, of the recommendations in the two reports to each other, we do not mean to imply that there are not many material points of difference in the two reports or that they arrive at their conclusions by the same road. The minority, which consisted of Prebendary Wakefield, chairman of the Central Unemployment Body, Mr. Chandler, secretary of the Carpenters and Joiners Trade Union, Mr. Lansbury and Mrs. Sidney Webb, dissent in many respects from the opinions and recommendations of their colleagues, and criticise them freely. Their report is a very able treatise from their point of view, and should be carefully studied by everybody who will, in any way, be responsible for forming a judgment upon the vast body of evidence collected by the Commissioners and upon the reforms which the situation calls for. Both reports will, for many years to come, be mines of information for the sociological and statistical inquirer. We may indicate as examples of this the valuable and authoritative account of the Hollesley Bay experiment, and the evidence of Mr. Bowley as to the regularisation of the national demand for labour, in the minority report; and the analysis of social and industrial developments since 1834, in the majority report.

Exhaustive as both reports are, there is one branch of the subject on which the reader will find no conclusive information, viz.: the additional expense which the contemplated reforms will involve. We fear that, in any event, this will be large, and will imply a heavy and permanent drain upon the public resources. Those reforms in administration are the most advantageous which tend to greater economy as well as to greater efficiency; and we wish we could persuade ourselves that that will be the character of the reforms now recommended. E.B.

7.—*Royal Commission on Coast Erosion and Afforestation. Second Report* (*on Afforestation*). [Cd–4460.] 1908. Price 6*d*.

This report is an example of that inconsequential manner of doing things which is peculiarly British. A Royal Commission, charged with an enquiry into the encroachment of the sea and the reclamation of tidal lands, was appointed in 1906 and was deliberately proceeding with its investigations. Nearly two years later the Commission was suddenly ordered to interrupt the even tenour of its progress, and to enquire at once whether, "in connection with reclaimed lands or otherwise, it is desirable to make an experiment in afforestation." The Commissioners, in their report, except for a casual observation that "the dunes, too, that occur on the coast . . . cannot be overlooked," appear to take little interest in reclaimed lands, but devote their attention to the "otherwise," while the "experiment in afforestation" which they propose consists in planting all the land found suitable for the purpose in Great Britain. From the acorn of a cautious reference, the full-grown oak of national afforestation on the widest possible scale rapidly emerged.

No quarrel need, however, be sought with the Commission for a bold interpretation of their reference. On the contrary, they have rendered a public service by treating the subject of afforestation comprehensively and courageously. The subject has been repeatedly nibbled at heretofore, and vague ideas were prevalent in the public mind. This report brings the subject from the clouds, and from henceforth its discussion is more likely to proceed in the clearer air of facts and figures. The report is well written and well arranged, and not the least of its merits is its brevity.

The Commission properly face, in the first instance, the fundamental question whether it is necessary and desirable to do anything to increase the production of timber in this country. They start with two statistical facts. The first is that the proportion of land under trees in the United Kingdom is smaller than in any other European country. This fact is, however, cited only as an explanation of the other statistical fact, viz., that we are almost entirely dependent upon imported timber for structural purposes. In the absence of any reliable data of home production, the extent of our dependence on imports cannot be precisely stated, but, at any rate, it may be assumed that we depend on oversea supplies for timber to at least as great an extent as we do for wheat. The Commission proceed to point out that the existing woodlands of this country are, as a rule, unskilfully managed and inadequately developed. Not only do they produce much less timber than they should, but the timber produced is not of the highest quality. The causes are partly ignorance, and partly a lamentable preference for sport, and even for beauty, when sporting or æsthetic considerations clash with the pure principles of forestry. For dealing with ignorance something has already been done by the provision of facilities for instruction in forestry at Oxford and Cambridge and some other centres of education, but the desire of owners of estates to combine pleasure with business, so to speak, in the management of their woods is probably incorrigible. The Commission adduce a further reason for taking steps to increase our timber production. They cite evidence to show that, while the demand for timber is growing, the world's supplies are decreasing. This, undoubtedly, is a serious consideration, and there is much force in the contention that, "The very serious shortage of the world's timber supply, to which we must apparently look forward, would appear to place the United Kingdom, which has benefited so richly from the exploitation of natural forests, under some obligation to replenish the stock by methodical afforestation, if posterity is not to be gravely hampered by the shortage of a raw material necessary to its industries."

Having thus satisfied themselves of the necessity for vigorous action, the Commission proceed to consider the influence of afforestation on employment. As this was the particular question referred to them, they discuss it at some length, and endeavour to make out as good a case as the facts allow. Unfortunately, the facts are stubborn. It is difficult to understand how the idea obtained currency that afforestation is a specially effectual means of providing permanent employment on the land. There are very few methods of utilising the soil which employ less labour on a given area. That woodlands provide a useful field for the casual employment of men living in the neighbourhood and having other means of livelihood is quite true; but if a small holder requires in addition to his holding some 100 acres of forest to support him, it cannot be said that the land is employing a large amount of labour. Professor Schlich informed the Commission that in Germany "there are no permanent forest workmen, only the protective staff to look after and take care of the forest." The Commission suggest that the clearing, preparation and planting of the land will employ twelve men per 100 acres for about six months. If, as they recommend, 150,000 acres per annum are planted, employment during each winter would be provided for 18,000 men. After the land is planted, it is estimated that permanent employment would be provided for one man per 100 acres. Consequently, under the scheme suggested, afforestation would retain on or return to the land 1,500 men each year. It is argued that the land is at present mainly devoted to grazing, and for that purpose does not employ more than one man to 1,000 acres or more. So far as the actual tending of sheep goes this is no doubt true, but the effect of sweeping away all the flocks on the hills would be far reaching, and it is not easy to calculate what the influence would be on the farms to which the flocks belong. A big flock indirectly employs more labour than is represented by the shepherd, and may, in fact, be essential to the continued employment of the whole staff of the farm. The scheme suggests the afforestation of 9,000,000 acres of land in the United Kingdom, of which 8,000,000 are assumed to be utilised only for grazing—although it may be observed that game and rabbits also occur and incidentally provide a certain amount of profitable employment—and 1,000,000 acres are poor arable land. On this basis, at the end of sixty years permanent employment will be found in the forests for 90,000 men, and they will have displaced on the grazing land 8,000 men, and on the arable land (at the usual calculation of three men per 100 acres) 30,000, showing a net gain of 52,000, plus 18,000 temporarily employed in different parts of the United Kingdom each winter. If we assume that no part of these 9,000,000 acres are or will be in the next sixty years capable of more profitable exploitation, this result may be deemed satisfactory; but it is a somewhat serious matter in these small islands to enclose so large a tract and to decide for ever that the density of population on that area shall not exceed one man to 100 acres. Already, with our present population, we have warnings that existing sources of food supply are not inexhaustible, and who can tell where in sixty years the margin of cultivation will lie? Not only by the pressure of demand, but also by the application, still in its infancy, of science to plant culture, land now apparently lying far outside the limit of profitable farming may then be economically available. If the nation sixty years hence wants bread it will not be put off with trees, and a popular movement for deforestation might well arise.

The Commission do not lay much stress on the claims of afforestation as a panacea for what is termed rural depopulation, though a reference is made to the emphasis with which "many witnesses" maintained that "it promised to be a powerful agency in stemming the tide of rural depopulation and in attracting back to the country many men and families who have migrated to the towns." When it is remembered that during a period of only thirty years, in Great Britain alone, 400,000 agricultural labourers have left the land, it is somewhat optimistic to contend that a scheme which proposes in the course of sixty years to find permanent employment for 52,000 men is doing very much to "stem the tide of rural depopulation."

The chapter in which the nature and extent of the land suitable for afforestation is referred to has statistical interest, but the data given are too meagre to permit a discussion of the validity of the figures put forward. In the absence of the evidence, it must be taken for granted that the Commission have substantial grounds for their estimate that there are 6,000,000 acres in Scotland, 1,500,000 acres in England and Wales, and 500,000 acres in Ireland of "mountain and heath" suitable for planting, and that in addition 1,000,000 acres, presumably in England, of poor tillage land would be "better under forests than as farming lands." It is not possible to do more than call attention to the curious statistical coincidence that the estimate made by Commission that 9,000,000 acres are afforestable provides exactly the area which at the beginning of their Report they state to be necessary to grow the quantity of timber now imported which is capable of being grown in this country.

Two schemes are put forward, one involving the planting of 150,000 acres annually for sixty years, so that a total area of 9,000,000 acres would be afforestated. An eighty-year rotation over two-thirds of the area is suggested, and it is admitted that, theoretically, the planting should be spread equally over the eighty years, but the taking of the land is accelerated because "the unemployed problem is so insistent on receiving public attention."

The second scheme involves the afforestation of 6,000,000 acres at the rate of 75,000 acres annually for eighty years. The land is to be acquired by agreement, if possible, and by compulsion if necessary. It is suggested that in some cases co-operation between private owners and the State may be arranged, but in any case it is assumed that the whole area should be under State control. Some extension of the present facilities for obtaining loans for planting is, however, suggested.

The finance of the two schemes is carefully worked out and the calculations are vouched for actuarially. An annual net outlay rising under one scheme from 90,000*l.* in the first year to 3,131,250*l.* in the fortieth year, and under the other from 45,000*l.* to 1,565,625*l.* is contemplated. Thereafter the forests become self-supporting and in the sixty-first year in one case and the seventy-first in the other, profits begin to accrue although full results are not obtained until the eighty-first year. The value of the property will then be in the one case 562,000,000*l.*, and in the other 320,000,000*l.*, being 107,000,000*l.* and 61,000,000*l.* respectively more than its cost. It is suggested that the money should be provided by a free loan from the Treasury to the Forest Commissioners. Posterity, eighty years hence, would reap substantial benefit as it would then, *ex hypothesi*, have settled the "unemployed problem," and enjoy an annual revenue from the State forests of either 17,000,000*l.* or 10,000,000*l.* It will be seen, therefore, that the Commission take a sanguine view of the capacity of the present generation for patriotic altruism.

8.—*L'assistance obligatoire aux vieillards, aux infirmes, et aux incurables. Commentaire de la loi du* 14 *Juillet*, 1905. Par Edouard Campagnole, sous-chef de bureau au Ministère de l'Intérieur. Avec une préface de M. Bienvenu-Martin, sénateur, ancien ministre, rapporteur de la loi de 1905 à la Chambre des Députés. xx + 588 pp., 8vo. Paris: Berger-Levrault et Cie., 1908.

In our notice of M. Sachet's commentary on the same law at page 141 of vol. lxx of this *Journal*, we stated broadly its principal provisions. The present commentary is more elaborate, and its author has a claim to write with some official authority as one charged in his daily work with the administration of the law. M. Bienvenu-Martin describes the book as "clear, exact, methodical, and complete." He states that the fundamental idea of the Statute is that assistance to the aged, the infirm, and the incurable is not a simple benefit of collectivism, but the acquittance of a positive obligation; the claimant of such assistance appeals not to charity, but to justice.

He is equally enthusiastic with regard to its practical results. Everywhere in France, he says, the aged and infirm poor receives, instead of precarious, humiliating, and insufficient alms, a periodical payment, which makes him a sort of pensioner and procures him a sufficient provision without degrading him in his own eyes or depriving him of his consciousness of the dignity of citizenship.

The contribution of the State for the year 1907 to the 340,610 pensions already granted amounted to 1,105,720*l.*; that of the departments to 320,640*l.*; that of the communes to 533,480*l.*, making a total of 1,959,840*l.* The progressive application of the law will greatly increase these figures for 1908. Comparing these figures with the experience of Belgium, M. Martin states that the Belgian law of 10th May, 1900, gave to workmen and past workmen in needy circumstances, aged 65 years, an annual allowance from the State of 2*l.* 12*s.* The expense is more than 520,000*l.*; for a population equal to that of France, it would exceed 3,000,000*l.* In France, the allowance is deferred to the age of 70, but varies from 2*l.* 4*s.* to 9*l.* 12*s.*, and at Paris is 14*l.* 8*s.*, while a certain number of old people are maintained in hospital at a cost of 16*l.* a year.

M. Campagnole prefixes to his commentary an historical review of the position of the question before the enactment of the law of 1905. Under a law of 29th March, 1897, discretionary power was given to communes and departments to award pensions, and provision was made for a State contribution towards these pensions. In 1901, 52 departments had availed themselves of this law and granted 16,692 pensions, receiving a State contribution of 5,406*l.* By 1906, the departments had increased to 69, the pensions to 26,618, and the State contribution to 16,408*l.* The majority of pensions granted under this law ranged from 4*l.* to 5*l.*

The body of the work consists of a commentary, section by section, upon the provisions of the law, which are discussed in full and ample detail.

In an appendix is given the text of the laws of 1897, 1902, 1905, and 1907, and of the various decrees, arrêts, circulars, regulations and models that have been issued by the authorities for carrying those laws into effect. As these documents altogether number as many as 23, there can be little doubt of the necessity and the usefulness of a guide to enable those concerned to thread their way safely through all these intricacies, and M. Campagnole's work has every appearance of being just such a guide as is wanted. E.B.

9.—*L'assurance contre le chômage.* Par Paul Dupont, avocat-publiciste. 264 pp., 12mo. Paris: Girard et Brière, 1908.

The subject of insurance against unemployment is calling for so much attention in the various States of Europe, and is pressing so urgently for a solution in our own country, that M. Dupont's little book is a welcome contribution to the consideration of it. He would have added to its value if he had been a little more careful in correcting the proofs. There is a curious example of this in his very first line. "Je suis homme et par conséquent rien *d'humain* ne m'est étranger, disait le poète latin," whom he quotes as having written "homo sum et *nihil* a me alienum puto," a much more general statement than either Terence or the gagging actor who is said to have interpolated the famous line is responsible for. Another occurs in the statistical chapter, where the census of workmen and others employed in 1896 is quoted as :—

In industry	5,844,000
,, commerce	758,000
Total	5,602,000

More pardonable misprints occur in the chapter on English measures for the relief of unemployment, where Lingfield and Osea island appear as "Singfield et l'île d'Osca," and Mr. Herring as "M. Herving." On the other hand, we gladly acknowledge that M. Dupont has taken pains to make himself acquainted with what has been done in England, of which he furnishes a careful and accurate account.

His statistical tables show (1) the monthly variations in the amount of unemployment; (2) the variations in unemployment due to occupation; (3) the experience of certain unemployment funds in different trades; (4) the working of the system of subventions to unemployment funds in France. He passes under review all that has been done not only in France but also in other countries to provide against the evils of unemployment by means of assurance; and arrives at the conclusion that a system of voluntary assurance, subsidised by the State and by the municipalities, is that which ought to be adopted. That assurance can only be efficacious if it is made by an association, group, or syndicate. While persons of different occupations can unite to form societies for sickness, invalidity or old age assurance, it is not so with regard to unemployment, since the liability varies with the different occupations. It is only by grouping the assured according to occupation that a fund for unemployment can be successfully worked, inasmuch as the requisite control can only be effected by those of the same occupation. By the side of the societies so formed, labour bureaux should be established, which would assist in finding employment, as speedily as may be, for the claimants on the fund. The employers also should do their share in the maintenance of the funds raised by the workmen. Let them, he says, consider their workmen as fellow-labourers and associates, cease to look upon workmen's organisations as the enemy, realise as far as they can the union of capital and labour in the social institutions that are to be created, and they will doubtless learn to know their workmen better, and thus destroy many prejudices and avert much ill-will.

In an appendix, the statistical information contained in the body of the work is brought down to a later date by a statement of the effect of official returns which appeared while the book was in the press; and a Government circular is quoted, in which the procurators-general are authorised to accept the certificate granted by an association of workmen to a member travelling in search of employment as evidence of the possession of certain means of existence, and therefore as a conclusive answer to any charge of vagrancy. E.B.

10.—*Unemployment: a problem of industry.* By W. H. Beveridge. xvi + 317 pp., 8vo. London: Longmans, Green, 1909. *7s. 6d.* net.

This is another of those thorough pieces of research which modern industrial problems are stimulating. With complete statistical evidence, so far as any such has been accumulated (and here it must be confessed that we have not enough statistical evidence yet to enable us to accurately estimate the magnitude of the unemployment problem), references to authority, surveys of past and present principles underlying attempts to deal with unemployment, a bibliography which, if not quite complete, indicates to the student a wide field for documentary research, and a well arranged index, Mr. Beveridge's book is a worthy model for future investigators. Further, Mr. Beveridge has a gift of plain writing which makes him very quotable, and tempts the reviewer into using Mr. Beveridge's words instead of his own.

The problem necessitates that "the inquiry must be an economic one. The object in view is not the framing of palliatives for present distress, but the discovery of causes and the suggestion, if possible, of preventive measures and final remedies. With this in view the problem must be approached, not from the standpoint of the Poor Law or charitable administration, but from that of industry. The first question must be, not what is to be done with the unemployed individual, but why is he thus unemployed" (p. 11). The inquiry, accordingly, is one for the economist, always presupposing the continuance of the present industrial system. Mr. Beveridge ignores, and rightly, under the circumstances, any suggestion of "nationalisation of the means of production, distribution and exchange" as a remedy, and applies himself to the solution of the problem how to prevent unemployment under private capitalism. Incidentally, it may be remarked, that no Socialist seems yet to have worked out the application of Socialist principles to the corresponding problem under "Collectivism." Perhaps it is premised that the problem will have then ceased to exist?

Mr. Beveridge orders his book so well that it is almost reducible to a plain line of argument. Examining the statistics of wages, income tax, and the alternating periods of trade depression and expansion, &c., he arrives at the "negative conclusion that there is no general failure of adjustment between the growth of the demand for labour and the growth of the supply of labour," and to "the positive conclusion . . . that there are specific imperfections of adjustment between the demand for labour and the supply of labour, and that these give rise to a real and considerable problem of unemployment" (p. 14).

There are, however, no means of numbering the unemployed, and apparently he considers it impossible to devise such means. "For purposes of scientific investigation or preventive organisation," therefore, "the analyses must be not of the numbers unemployed, but of the causes of unemployment, and the extent to which they are essential or accidental in the existing economic order or in human nature." There always exists, however, a mass of under-employed persons, and this is the main problem. Trade depressions mainly serve to increase this mass; trade expansions never entirely absorb it. Defects of personal character do not so much cause unemployment as determine who shall be unemployed. The unemployed, therefore, "are at any time likely, on the whole, to be on a lower level than their fellows. Inferiority has caused them to be selected for dismissal. Dismissal and the resultant idleness accentuate their inferiority" (p. 139). Here, of course, we have a vicious circle, tending to make "unemployables." The remedies of the past, *i.e.*, the Poor Law, municipal relief works, special charitable funds, and the Unemployed Workmen Act, have all failed, except that they have served to indicate the inherent defects in all systems of relief work. The problem in the first place becomes mainly one of "decasualisation of labour"; and this should be accomplished by means of labour exchanges. This would, of course, create a large mass of unemployed labour. For example, the classic case of over-supply of casual labour is that of the Liverpool dock labourers. Here some 15,000 workers share amongst them about enough work to fairly constantly employ perhaps 10,000. It is certainly possible to so organise the labour of the long line of docks that at the most only 12,000 labourers would be required to ensure a quite sufficient reserve to meet the most urgent pressure. A thoroughly organised labour exchange would, in this case, throw some 3,000 or more labourers permanently on the labour market. Such persons, in Mr. Beveridge's opinion, would soon be absorbed in other branches of industry, though he does not tell us what, or what is to become of them in the meantime. Most of them would be, indeed, practically "unemployables," but in any case it would be too much to hope that new openings would so quickly arise as to absorb them immediately. However, a more important problem is the prevention of a too rapid recruiting of the unskilled labourer, and this can only be done by the training of boys and girls for specialised employments. There is a want of balance between the skilled and the unskilled, largely brought about by the using up of boy and girl labour, and discarding it when the period of adolescence is past. "Piecing" in the cotton trade is a classic example of this, but the Post Office with its telegraph boys, the railway companies with their van boys, are also notable examples.

Labour exchanges will not, however, touch the very real problem of employment through industrial depression which at times Mr. Beveridge seems to ignore. He offers four suggestions: (*a*) Short-time working (with overtime working at busy times to prevent too rapid recruiting in any particular trade); (*b*) insurance against unemployment where short time cannot be carried out; (*c*) more systematic distribution of public work; and (*d*) greater elasticity of wages. With regard to (*a*), he says "the difference between a ten hours' day and a nine hours' day, for instance, would, other things being equal, carry off a depression of 10 per cent. The difference between a ten and eight hours' day would carry off a depression of 20 per cent." But other things are not equal. In the first place, the proposal is tantamount to having a normal day of, say, eight hours, a supply of labour just sufficient to fulfil demands at the worst time, and working overtime (presumably without the usual time-and-a-quarter payment) in accordance with the increase in demand. This is a small point, however, and a more important one is that it rarely happens that a reduction of hours diminishes output *pro rata*. In the cotton trade, for instance, where short time on an extensively organised scale is resorted to to limit output, the reserves of personal efficiency are such that probably a reduction of one hour per day would not mean a reduction of more than one-half of $\frac{6}{55}$ths of the average output in a normal week. Further, an increase in the hours of labour would not *pro rata* increase output, and this is why employers prefer more operatives to overtime working. Suggestion (*d*), which means, for instance, a reduction of painters' wages in the winter from the previous summer rate to induce people to have work done then instead of later, would be a very dangerous thing. In the first place, as between summer and winter, the tendency is to demand higher rates per hour in winter to compensate for the shorter hours which may be worked. Even where the old system of payment at daily rates is still existent the reduction of wages per day in winter is not equivalent to the reduction of hours worked. It is doubtful, however, if ever in more than isolated cases a reduction of wages induced people to have work done earlier than was previously intended. Take the shipbuilding and engineering trades, for example. Here two distinct policies of dealing with wages may be found. At Hull and Southampton reductions in time of depression are practically unknown. At the former place the policy for nearly thirty years has been to keep wages from oscillating, and only at the very worst times have small reductions been made. On the north-east coast, the Clyde, at Belfast, and at Barrow, on the other hand, wages are altering nearly every year, and general advances and reductions have more than once taken place within intervals of six months. Yet it is notorious that the industries concerned are not either more or less stable at one port than at another. The labour cost of production in most industries is usually not sufficient to materially effect the price of the finished article, and in those industries where wages are the largest part of the cost of production, as coal and iron mining, &c., they *follow* prices, and cannot therefore affect demand. It would seem, therefore, that this suggestion will not do at all, and that its adoption would be positively dangerous in some trades. Rather, the fixing of wages for longer periods would seem the desideratum.

Space will not allow of a discussion of Mr. Beveridge's views of the requirements of a reformed poor law, but they deserve close consideration and will repay study. Indeed, his treatment of the whole problem is very systematic and thorough, and his conclusions are certainly so well argued that they demand respectful consideration.

The statement respecting casual labour in London at the beginning of the last paragraph on page 173 is rather obscure, though the meaning is ascertainable. But this is a minor defect, as is the omission from the bibliography of a paper in the *Journal of the Royal Statistical Society* for December, 1899, where the first attempt at forming a "percentage unemployed" for a long series of years is to be found, and the inclusion of a quite unimportant paper in the *Journal* of March following, Incidentally, it may, perhaps, be pointed out that it is not at all clear what the "percentages of unemployed" in columns 5 and 6 on p. 39, quoted from the second "fiscal" blue book, mean.

G.H.W.

11.—*Le problème des retraites ouvrières envisagé au point de vue financier.* Par Albert Jouve, docteur en droit. 237 pp., 8vo. Paris: Rousseau, 1907.

Dr. Jouve adopts the view that, in the present economical conditions, the workman by his unaided endeavours cannot save enough to provide for his own old age or invalidity. He proposes to himself the problem whether by means of a sound financial system of compulsory or voluntary assurance the workman could be enabled to do so. To solve it, he enters upon a technical study of the methods of insurance. Taking the hypothetical case of an insurance fund, the members of which increase by 100,000 each year, attaining the age of 25, that is to say, a perfectly stable population, he finds the ultimate result would be that out of a total number of 4,000,000 members, 700,000 would be pensioners at 65 years of age. In a decreasing population, the proportion would be greater. These figures are arrived at from a table, known as "Table C.R.," based on the experience of the Caisse nationale des retraites pour la vieillesse, and an application of the same table to the working population of France, estimated at 9,000,000, would produce as many as 2,218,000 of the age of 60 and upwards. It is suggested, however, that a table derived from the experience of annuitants, who are selected lives, would give a much lower rate of mortality, and therefore a much higher rate of survival, than one based on the experience of the general population, still more perhaps in the case of one based on the experience of the working population. Comparison with other French tables reduces the figure to 2,048,000 and 2,080,000; and tables representing the mortality in Italy, Germany, and Switzerland still lower, in one case to 1,697,000. Other calculations reduce this figure as low as 762,000; but Dr. Jouve shows that these are not trustworthy.

In commenting on the financial resources from which these pensions are to be met, he says that it is curious to see a country like England repudiating the principle of a personal contribution from the workman, and adopting that of paying the pensions exclusively from the general budget; he contrasts it with the German system of combined contribution by the workman, the employer, and the State, an arrangement which he considers to be financially necessary if the pensions are to be at all adequate in amount. He proceeds to consider at length the theoretical methods of determining what the respective contributions should be; and determines, quite justly, that each generation ought to raise the funds to meet its own obligations. With regard to the State subvention, though he holds that theoretically it ought to be by way of a contribution towards the premiums, he concludes that the more practical method is by way of an increase of the pensions upon a scale determined beforehand: inasmuch as the power of raising the necessary funds by taxation is in itself the equivalent of a reserve fund.

Dr. Jouve illustrates his argument by an enquiry into the experience of Germany, and the various projects that have been submitted for consideration in France; and arrives at the conclusion that no system will be practically successful which attempts an absolute theoretical consistency. You must combine the good features of several systems if you wish to avoid the dangers to which every system is exposed. The basis of any sound system, however, must be one of capitalisation, as that is the only rigorously scientific principle.

One of the difficulties attending a system of capitalisation, and that not a negligible one, is the difficulty of investing large funds; and this Dr. Jouve proceeds to consider in the third part of his work. According to an actuarial note appended by M. Guieysse, Minister of Commerce, to his Report for 1904, the capital sum ultimately arrived at would be 800,000,000*l*. It is true that the maximum would not be reached till after eighty years or so, and that it is to be hoped the wealth of the country will be growing in the interim. Here, again, Dr. Jouve seeks enlightenment from the experience of Germany, where by 1902, 50,000,000*l*. sterling had been accumulated and invested at a rate of interest exceeding 3½ per cent. At the end of 1903, 18,000,000*l*. of this sum had been applied to local improvements, sanitary and philanthropic works, workmen's dwellings, hospitals, sanatoria, and the like: and he warmly advocates this method of investment as preferable to that of the purchase of Government securities.

The fourth part of the book relates to the ways and means necessary to be provided to maintain the equilibrium of the budget from the point of view of the State. He forecasts an annual charge rising from 9,916,000*l*. to a maximum of 14,484,000*l*., and then diminishing to a settled sum of 6,300,000*l*., as the portion of the cost which the State will have to provide.

Dr. Jouve's conclusion is that from the financial point of view, the question of workmen's pensions appears singularly complex, and raises difficulties of principle and of organisation, which are among the most delicate that the French legislature has had to resolve for a long time past. The first of these difficulties is the absence of technical data sufficient to establish the system upon an exact basis. Another is the question of the financial system to be adopted for the interior mechanism of the fund. The author's patient and thorough study of the points involved in the solution of these various difficulties cannot fail to be of the greatest value. In summing up the result of his labours, he calls to memory a wise utterance of Léon Say:—"Si le cœur doit être le moteur des institutions de prévoyance, c'est la science qui doit en tenir le gouvernail." E.B.

12.—*Problems of unemployment in the London building trades.* By Norman B. Dearle. xx + 215 pp., 8vo. London: J. M. Dent and Co.

This is a close and detailed study of the conditions of employment in the London building trades which reveals the facts that the industry is depressed, that it suffers from casual employment, that a large number of operatives (Mr. Dearle calls them "hands") engaged in the various branches are badly trained, that the trades are largely recruited from the provinces, that apprenticeship has nearly gone out, and that certain new processes and some specialisation have "revolutionised" the trade during recent years. Mr. Dearle suggests a better arrangement of the work of local bodies so as to take on most men during the ordinary seasonable depression, and the now inevitable "Labour Exchanges," with a better training of the young incomers. As a matter of fact, the problems of the London building trade are the problems of the trade in every large town, perhaps slightly accentuated, and while a study such as this is useful as adding to our knowledge of the problem of the organisation or want of organisation of industry, the main features of the trouble in London are apparent in Manchester, Bristol and other industrial centres.

Unfortunately, Mr. Dearle's book is marred by a lot of small errors, trivial, but annoying. Their existence suggests a haste and want of thoroughness which is contradicted by the painstaking detailed consideration of the evidence personally collected. He speaks many times of the trades-unions; the right term is obviously trade-unions. There are no trades-unions now, though there are Trades Councils and Trade Union Federations. Again, he speaks of the "London Unions affiliated to the great national societies" when referring to the organisations in which London building operatives are enrolled. This is a quite wrong description, as they are *branches* of the great national societies. To speak of them as affiliated to, &c., suggests that they are autonomous, and of independent origin, while, as a matter of fact, most of them have been definitely formed as branches of the great national societies. The whole description of the trade unions at pp. 150–151 should be re-written for a future edition.

There are, too, several errors about wages and hours, *e.g.*, the plumbers are described at p. 151 as rising to 10*d.* per hour after 1872, while those in the other branches remained unchanged at 9*d.* Their wages were, like the other trades, unchanged between 1873 and 1892, and for nearly half a century they have received the equivalent of about one halfpenny per hour more than the carpenters, &c. Then, again, they are described at p. 134 as working only 47 hours per week, and at p. 199 correctly as working 50 hours. The change from 47 hours to 50 took place in 1905. At p. 27, on the authority of Mr. Stanley Bird's evidence before the Labour Commission, it is stated that wages rose 50 per cent. between 1859 and 1872, and were in the latter year fixed at 9*d.* per hour for the skilled workmen except painters. This is all wrong; the 9*d.* was fixed in 1873, and the correct figures are (summer wages and hours) :—

	1847-52.	'53-60.	'61-64.	1865.	'66-71.	1872.	'73-91	'92-95.	'96-99.	1900-08.
Carpenters Masons .... Bricklayers Plasterers	30*s.*	33*s.*	7*d.* per hour	7½*d.*	8*d.*	8½*d.*	9*d.*	9½*d.*	10*d.*	10½*
	58½ hours	58½	56½	56½	56½	52½	52½	50	50	50

* Plasterers, 11*d.*

The most the advance between 1859 and 1873 can be taken at is from $6\frac{1}{2}d.$ to $9d.$ per hour, or less than 50 per cent. In weekly earnings it was from $33s.$ to $39s.\ 4\frac{1}{2}d.$, or about 20 per cent. Further, there was a great strike in 1878 for $10d.$ per hour, during which hundreds of masons and carpenters were working at this rate, only to go back to $9d.$ when the strike failed and trade became depressed.

Mr. Dearle suggests (p. 188) that the members of the Steam Engine Makers Society are more regularly employed than the members of the Amalgamated Society of Engineers, because the former help one another to get jobs. The real explanation why the Steam Engine Makers have less unemployment is probably that the Amalgamated Society of Engineers have by far a greater proportion than have the Steam Engine Makers of members employed in shipbuilding and marine engineering, and these branches of industry are notoriously more fluctuating than the textile machine making, &c., in which so many of the Steam Engine Makers are employed.

The figures in the footnote at p. 41 are rather confusing, and a diagram would be much clearer.

On the whole, these blemishes do not affect the main purpose of the book, and as an analysis of the situation and difficulties of one trade Mr. Dearle's book is certainly valuable and worthy of attentive study. G.H.W.

13.—*La grève, les salaires et le contrat de travail.* Par D. Zolla, Professeur à l'École de Grigon. Préface de M. Anatole Leroy-Beaulieu. 305 pp., 8vo. Paris: V. Giard and E. Brière, 1908.

The thesis of this not very important work, supported by the preface, and repeated again and again, is that strikes have no influence on wages. The proof offered is circumstantial, supported by rather irrelevant theoretical considerations. A review of the movement of wages in France in the nineteenth century shows, on the whole, that wages rose most rapidly before workmen's associations were legal, and comparatively slowly in more recent years, during which strikes, promoted by these associations, were frequent. It is further shown that, in comparing industry with industry, there is no relation between increase of wages and frequency of strikes. It is urged that the only cause of increment in real wages is increased productivity, and this statement is supported by interesting statistics of production. The erroneous notion that want could be replaced by luxury, if only the division of reward between land, capital, and labour were less unequal, is exposed at length.

The arguments brought forward are (except in the most obvious cases) unconvincing. It is no doubt true that no country is so rich that all can have everything desired; but it is equally true that, so far as mere mass of produced commodities is concerned, there is enough for moderate comfort for everyone. If, as is alleged, an equal division of the profits of all the French railways among their employés would give each "only" 200 francs per month, still, this would be a very handsome addition to their incomes; and the fact that this quotient is higher than would be obtained in most industries can hardly be used as a *reductio ad absurdum* of the idea that the national income other than wages is large. The author, in fact, proves too much. He never discusses the fundamental problem as to how the rewards of landlord, capitalist, and labour are mutually determined, and whether the effects of the law of substitution, by which the utilities of different agents of production are balanced against each other, is inevitable in its action. He does not discuss the justice of the assumption that workmen at all times and in all cases are sufficiently good bargainers individually, or have sufficient mobility, to obtain the wage that, theoretically, should come to them; nor does he examine whether increased wages are themselves the prelude to increased productivity. As a counterblast to socialistic propaganda (which the author evidently intended to produce) the book will be unconvincing, but as a collection of interesting statistical data (with adequate references to their sources) it is not without its value. A.L.B.

14.—*Les trusts et les syndicats de producteurs.* Par J. Chastin, Professeur au Lycée Voltaire. Paris: Félix Alcan, 1909. Price 6 francs.

After a sketchy account of combinations of employers before the most recent developments of modern industry, M. Chastin proceeds to survey present-day combinations, whether in the form of kartell or trust, in Germany, Austria, France, Belgium, Spain, Russia, England, and the United States. Generally speaking, this account is well done, and contains the best-known and most important facts concerning the most prominent combinations. An exception to this statement must, however, be made in the case of the chapter on England. Here M. Chastin's information is always out of date, and often so defective as to be positively misleading. He is not acquainted with the most recent developments, and he does not grasp the real character of modern industrial organisation in Great Britain.

The second part of the book consists of four chapters dealing with the effects of combinations on competition, prices, wages, and finance. Here the facts are well-known, and M. Chastin marshals them in orderly array. We are obliged to him for the prominence which he gives to the Comptoir de Longwy, whose operations are less well-known than they deserve to be. There is little novelty in his criticisms, but then, there is little room for novelty. The third section of the book consists of two chapters on combinations and the individual, and combinations and the State. His general conclusion appears to be that combinations are inevitable, and that they must lead to a certain destruction of initiative. On the other hand, he thinks some of the dangers exaggerated, and that there must always remain a wide field open for the individual producer. He foresees some risk of anti-social agreements between the trusts and the trade unions, but the basis of his argument is unsound; and, indeed, he seems to be possessed with an unnecessary fear of the trade unions. In the last chapter he examines and rejects the views of the socialists that the development of trusts must lead to the State control of industry. In support of his opinions, he enters upon a criticism of municipal action in England and elsewhere, which is not new, or sufficient, or convincing.

It should be added that this work was "récompensé par l'Académie des Sciences Morales et Politiques." H.W.M.

15.—*La propriété. Evolution de la fortune privée : enquête sur la propriété non bâtie et bâtie : enquête agricole.* Par Edmond Michel. viii + 336 pp. Paris: Berger-Levrault et Cie., 1908. Price 12 frs.

This work, which is the first of a series of statistical and economic investigations by the same author, contains a mass of detailed information bearing on the valuation of private property in general and of real property in particular. Consisting partly of an elaborate analysis of official published statistics, it also includes the results of a special inquiry carried out by the writer into the value of rural land. The whole production bears evidence of long and laborious research, and forms a valuable contribution to the realistic study of social organisation.

The author's estimate of the privately owned wealth of France [nearly 10,000 millions sterling] is based upon the statistics of successions. The critical question of the multiplier, however, is not discussed; but, following M. de Foville, it is assumed that the correct relation between the number of estates passing at death and the number actually existing is given, either by the average number of years survival of a generation (35) or by the proportion of persons dying to the number surviving (45). M. Michel takes the means of these two figures in his estimate. Mr. Bernard Mallet's criticism of these methods (*Journal of the Royal Statistical Society*, 1908, p. 70) has, however, shown that these figures are too high; but the error in the present case is modified by the very considerable evasions of the succession duties, which the author refers to but does not allow for in his figures. The statistics show an appreciable decline in the value of estates passing in the last ten or fifteen years; but the fall, which is in M. Michel's opinion accentuated by the increasing evasions resulting from the heavier rates of duty, conceals a rise in the value of personal property and in the value of buildings and of building land. The item which has caused the fall in the total is rural land. This branch of the subject is treated in considerable detail. The writer has made full use of his position as inspector of the *crédit foncier* to prosecute personal inquiries throughout the country, and has supplemented his own observation by returns from the local officials of his department. For the purpose of his valuation he draws the distinction between intrinsic value, letting value, and statistical value. Intrinsic value depends on the products which can be raised from land measured, apparently, in units of quantity. Letting value depends on the price of produce, &c., and on the form of tenure—*e.g.*, letting value of metayer land is quite different from its value under a system of tenant farmers. Hence the need of the conception of statistical value, *i.e.*, an estimate of the value of land under arbitrary conditions of tenure and cultivation. The latter half of the book is, therefore, occupied with a detailed exposition of the yield of land under different crops, the productivity of cattle raising, the valuation of animal products, &c. This part of the subject is interspersed with practical suggestions for agricultural reform, and for the better organisation of marketing among small producers. The want of enterprise, for example, is illustrated by the case of cider, in which backward methods of preparation and sale have caused a large export of apples to Hamburg, where "un cidre mousseux" is produced, and sold as champagne! Why should not this lucrative industry be in the hands of the original growers?

The author has throughout used both intensive and extensive methods of treatment. Each subject is first dealt with for the whole of France, and this is then supplemented by a much more detailed exposition relating to the canton and town of Bayeux. In the case of building land, for example, the variation of value is shown street by street, the differentiation being extended even to the most frequented side of the road in the case of commercial thoroughfares. This combination of methods adds a realistic touch to the more general figures, but the effect is rather to overweight the book with a wealth of detailed figures, many of which might well have been relegated to an appendix. The absence of a detailed subject-index is also a serious drawback to a volume which will be used largely as a work of reference. The statistics are amply illustrated by charts and diagrams, and in particular by a series of statistical maps of France. W.T.L.

16.—*The Book of Wheat.* By P. T. Dondlinger, Ph.D. 369 pp. New York: Orange Judd Co., 1908.

Defined by its author as both an economic history and practical manual of the wheat industry, this volume brings together much technical information, collected largely from an American standpoint, relating to the cultivation and growth of the wheat plant, and the conditions of the production, transportation, storage and marketing of the grain of this leading cereal. Without professing to be an original botanical treatise, Dr. Dondlinger has summarised from numerous official and other publications instructive items of practical knowledge about the chief bread grain of the world, its history, its varieties of type and yield, and the modes of its cultivation, the insect and other enemies of its growth, and the changing influences of environment, shown in the conclusions arrived at by many chemical and botanical experimenters. He traces, with the aid of charts, the altering distribution of the cereal within the United States, and illustrates by some striking figures the developed means of moving the produce, the grading and classification of the grain, and the progress of the millers' skill in its manipulation. While he has not left without discussion the questions affecting price, he has not dealt statistically with the full history of this matter, and has mainly examined the varying influence of speculation and of actual supply and demand on the values of the bread supplies of many nations. In this connection he is no alarmist as to the future risk of disturbance by "corners," the past methods of which he describes, nor does he share the prediction of some prophets as to any impending shortage of wheat.

As may be seen, this book is not primarily a statistical work, but its claim to a place in a statistical library may rest on the wide range of the references to the various bulletins, reports and treatises which have been consulted by the author, and on the personal experience in the wheat areas of North-Western America, and the advice of experts in official, historical and business circles on which he has so largely drawn. Students may be glad to have the long bibliography of twenty-seven pages of the smallest type, into which are packed the titles of a great mass of publications bearing on wheat, its growth, use and value. The great majority of these works are bulletins of the United States Government Department, and the conclusions of some of these have been already noted in this *Journal*. From a statistical standpoint, it may be hinted that the data of these publications require some more study before they are accepted than could perhaps have been given here, and there are several tables quoted here which much require bringing up to date. Despite the index, more frequent reference in the text of the work to the particular authorities relied on for specific statements made, and for some of the larger figures quoted, would have been welcome, while the always difficult estimates of an item so hard to arrive at as the comparative cost of production in different localities would have well repaid more elaborate enquiry. Again, the discussion of the future possibilities of extended wheat growing in other parts of the globe might have been carried very much further than the short notes on India, Australia, Argentina and Canada. For the latter, it may be noted, the author regards as "probable" an ultimate cultivation extending to 150,000,000 acres, or three times the whole area under wheat in the United States, and although, following a U.S.A. Bulletin of 1904, he writes less favourably of the Argentine prospects, he mentions an estimate of a future 60,000,000 acres there. It would not be right, however, for a reviewer to pass over occasional though serious errors in the text. In the short summaries of wheat growing conditions outside the United States, we are told, on page 315, that by 1868 less than 2,500,000 acres of wheat were grown in Great Britain, whereas the true figure for that date is much above a million more. Again, Dr. Dondlinger speaks on the next page of 25,000,000 bushels of wheat being exported annually by both Roumania and the Netherlands, and Belgian "exports" as being about half this amount, whereas only one of these countries—Roumania—is on balance an exporter at all, and her yearly figure varies widely. As the table given two pages later itself indicates, the imports of wheat into both Belgium and Holland much overtop their exports, which can only be referred to a transit trade.

P.G.C.

17.—*Die geographische Verteilung der Getreidepreise in Indien von* 1861 *bis* 1905. Von Th. H. Engelbrecht. viii + 112 pp. + 30 charts and 2 diagrams. 8vo. Berlin: Paul Parey, 1908.

This volume is the second of a series which is intended to deal eventually with grain-prices all over the world, and the first of which was concerned with the United States. The principal results of the author's investigations, which must have been exceedingly laborious, are best understood through the numerous charts at the end of the volume. He deals separately with each of the principal food-grains for each decade, beginning with 1861, and by plotting on a map the prices at each station throughout India, for which the data are available, he is able to draw very clearly the contour lines of equal price. There are a number of interesting generalisations arising out of an examination of these charts. Although they are not for the most part very startling or very different from what one would have anticipated with great probability *à priori*, they certainly make our knowledge much more precise, and will be invaluable to the economic historian of India when he appears, or to anyone who attempts the very necessary task of constructing a reasonably scientific index-number of prices for the principal provinces of the country. In the case of wheat and rice the steady rise of prices, as we move away from the districts where each is grown, is perhaps more definitely and precisely marked than one would have expected; and as we pass from the decade beginning with 1871 to that beginning with 1881, the influence of railways towards levelling prices in different parts of the country is well illustrated. The charts indicate that for the great majority of food-grains higher prices ruled in Southern India during the whole period under consideration than in what used to be called the Upper and Lower Provinces of Bengal. The reader who is interested in the general trend of the prices of Indian food-grains in recent times will derive a far better general impression from an examination of these tables and charts than from any of the Government statistics. The author derives his figures almost entirely from the official *Prices and Wages* volume, and it must be remembered that data of this kind, which are not collected for a definite administrative purpose, are often most unreliable, especially for the early years and in the case of native States. In general these are the only figures available; but inferences from them, if they are at all unexpected, must be made with great caution. J.M.K.

18.—*A History of the Bank of England.* By A. Andréadès. Translated by Christabel Meredith, with a Preface by H. S. Foxwell, M.A., F.B.A. Two volumes in one, 1640-1903. xxxix + 455 pp., 8vo. London: P. S. King and Co., 1909.

There are two reasons for which we rejoice at the opportunity given to extend a hearty welcome to this book. We are glad that by translation from the French, in which it originally appeared, Professor Andréadès' authoritative history should be rendered more accessible to English students; and the work required to accomplish this result seems, so far as we can judge, to have been performed with skill and judgment. But we have a further cause for congratulation; for those who have known already and appreciated as it deserved this contribution to our English economic history in its older form will feel, we are sure, that in its fresh dress it has been greatly enriched by the Preface written by Professor Foxwell. If we may be excused for saying so, we have experienced once again, in reading this instructive introduction, a regret which many economic students must often have been tempted to express before. For the more Professor Foxwell allows us, as in this instance, to benefit by his rare capacity for luminous and attractive exposition, and to obtain some notion, however limited, of the large stores of his vast and exact erudition, especially on monetary topics, the keener must, perforce, become our eagerness for further sustenance of this tempting and nutritious kind; and yet hitherto he has merely whetted our appetite by such Prefaces or Introductions, welcome and informing as they are, to other writers' work, without affording the more adequate satisfaction of the fuller meal which would be provided by such a treatise as he alone could write on certain economic subjects. In the compass of the few pages he here occupies he has thrown, as it seems to us, new light on the period of the Bank Restriction; and he has virtually suggested, or laid down, the lines on which the accepted accounts of that important episode in the history of the Bank of England should be now rewritten. He has also brought his known wealth of bibliographical learning to bear upon the discriminating judgment he has passed on the different writers who had attempted in less or greater part before what M. Andréadès has been so remarkably successful in achieving as a whole. We are glad to find that Professor Foxwell confirms an opinion we have for a long time entertained that Thorold Rogers' contribution to the history of the Bank in his "First Nine Years of the Bank of England" represents the highest, and perhaps the most enduring, portion of that economist's extensive work, and displays his industry, capacity and erudition at their best.

On Professor Andréadès' book itself it is the imperative duty of every fair reviewer, as it will, we have no doubt, be the agreeable task of every careful reader, to endorse the handsome eulogy bestowed by so competent and just a critic as Professor Foxwell; for we have here lucidly and impartially set forth the most complete account, which has hitherto been written, of the history of the "greatest financial institution in the world." The author may, indeed, modestly remind his readers that the narrative presented in these pages is "a history of an English institution written by a foreigner and intended for the use of foreigners." But, while we may regret on patriotic grounds that the work should have been left for a Greek economist to undertake, we cannot feel aught but satisfaction at the welcome consequence which has followed from this cause. And, in some respects the author has enjoyed an advantage; for he has surveyed his subject from a detached position. His conclusions are not accordingly disturbed by prejudice or favour. He has moreover equipped himself for his enterprise by assiduous research; and he has investigated with judicial pains all the accessible material. Professor Foxwell notes, it is true, a few omissions from the tale; and Professor Andréadès himself has purposely abridged his story when he deals with the Act of 1844 and its various sequelæ. But, as Professor Foxwell aptly says, "the Act has been discussed *ad nauseam*," and the "earlier" portion of the history of the Bank "has never before been thrown into a form so convenient for English students," while "in the later part some new matter of interest, especially the sketch of the relations between the Bank and the Treasury," will be found. Professor Andréadès' book, indeed, as a whole must, as Professor Foxwell appropriately observes, "be held to be in many respects a *tour de force*." "Written by a Greek in French," "notwithstanding the double difficulty with which the author had to contend in describing an institution, so characteristically English, in a language not his own, it is the most comprehensive and most readable account of the Bank yet published."

And, we may remark in conclusion, what an instructive and fascinating chapter of economic history is unfolded in this narrative! The prominent part played by this single institution in the commercial and industrial development of our country is emphasised by the apology of the author for introducing into his account so much of general history; for the progress of our manufacture and our trade was in fact largely dependent on the creation and extension of an effective organisation of credit, such as the Bank supplied, systematised, and represented. The vast proportions indeed of the structure, which has finally been reared on the basis of modern banking, as first laid tentatively by those Goldsmiths who were the predecessors and the opponents of the Bank, are not more astonishing than is the strange but true paradox furnished at the present day, as another able author has pointed out in a recent book. For the fear of an internal panic may be now to all practical purposes dismissed by the pregnant reflection that the Bank of England could in effect at such a season enlarge its own deposits by giving the precise accommodation which they would naturally desire to those surrounding banking institutions which compose the hierarchy of which the Bank itself occupies the central highest place. The wonderful process which thus took its genesis from the operations of the Goldsmiths, and has reached its consummation in this identity of "cash" with the deposits in the Banking Department of the Bank of England, is traced with care and explained in detail in Professor Andréadès' history now translated into English under such favouring auspices. The book should surely find a place henceforth upon the shelves of every English economic student's library. L.L.P.

19.—*Soziale Gesetzgebung und Statistik. Ein Beitrag zur Frage der Errichtung eines Eidgenössischen Sozialstatistischen Amtes.* Von Dr. N. Reichesberg. viii + 138 pp. Bern: Scheitlin Spring und Cie., 1908.

This monograph by Dr. Reichesberg is a sustained argument for the formation in Switzerland of a Federal Bureau for Social Statistics. To the foreigner, the sections of chief interest will be the two introductory chapters on "the problems of social legislation," and "the claims of social legislation on statistics."

The author commences by protesting against the usual definition of "social legislation" as "legislation intended to alleviate the lot of the working classes." Such a definition, he argues, is unscientific and too narrow. Any legislation is social legislation which interferes in the struggle between different social classes, and is directed towards the attainment of some definite social ideal. He regards it as the problem of social legislation to weaken and ultimately abolish class distinctions and class strife, and as the immediate duty of such legislation to support that form of production which is in a position to produce the greatest quantity of goods with the least expenditure of human labour, whilst removing everything in the process of production which may be detrimental to the workers. A systematic collection of social statistics is needed which shall be definitely and consciously adapted to the ends of social legislation.

But such a general statement hardly carries us far, and we must confess to having read Dr. Reichesberg's chapter on the claims of social legislation on statistics with some disappointment, for it appears to us lacking in practical and definite suggestion. We concur that the term "social statistics" should not be limited to statistics affecting the working classes—in fact we do not think that it would be so understood in this country—and we agree that even the labour statistics of the present day (as illustrated by those of our own Labour Department) do not give "a complete picture" of the economic condition of the working classes. We further concur with the author in thinking that the working classes should not be treated alone but as an integral part of society. But surely the question is what statistics should be collected and in what way? To these definite questions the author gives no definite answers, but puts off the enquiring reader with a few generalities as to the futility of social legislation in the absence of necessary information, the desirability of statistics exhibiting the tendencies of social development, the exact conditions of life of different social classes, and the productivities of different forms of industrial organisation. The present work, he says, is not the place for a detailed programme. If the author was prepared with a programme it was, however, we think, a mistake of judgment not to include it: it would have given reality to a rather abstract argument.

The introductory chapters are followed by an interesting sketch of the historical development and the present state of federal statistics in Switzerland, the growth of which appears to have been seriously hindered by the insufficiency of the power of the Central over the Cantonal Authorities (several of which possess their own Statistical Bureaus, all acting completely independently of one another), as well as by the very inadequate equipment of the Central Bureau. A discussion follows on the utilisation of the voluntary "class-interests organisations" of Switzerland—*i.e.*, the four recognised organisations of traders, employers, and workmen—in social and statistical inquiries.

The author concludes that a special "Social Statistical Bureau" should be formed, which should, in fact if not in name, be independent of the present Federal Statistical Bureau. It should be assisted by an Advisory Committee, on which the above-mentioned Associations should be represented, which should not only be responsible for fixing, in conjunction with the Director of the Bureau, the general lines on which the statistical inquiries should be conducted, but should also have the power to initiate investigations of a non-statistical type ancillary to the inquiries made by the Bureau. G.U.Y.

20.—*Essais de statistique morale.* I. *Le suicide.* Par Camille Jacquart. 106 pp., 8vo. Bruxelles: A. Dewitt, 1908.

This is the first of a series of essays on moral statistics promised by M. Camille Jacquart, with no intention of trespassing on the problem of free-will, but simply of studying a certain number of acts which throw some light on the moral condition of the population, with especial reference to Belgium. It is unfortunately true, as the author says, that no official statistical bureau records our acts of virtue, and consequently when we speak of moral statistics we really mean statistics of immorality. Of these, the statistics of suicide form one important section, and, owing to the number of special studies that have been written on the subject, an essay thereon forms a not unnatural introduction to the series.

The present monograph falls into two distinct portions, the first dealing with Belgium alone and the second giving international comparisons. The annual rate of morality from suicide in Belgium has increased rapidly during the last thirty years, as in most other European countries. During the years 1876 to 1884 the rate averaged 98 per million of the population, during 1901-05 no less than 125 per million, an increase of 28 per cent. The progression has not, however, been at all uniform, but has fluctuated to a considerable extent with the course of trade. Little light can be thrown on the relation between suicide and civil condition in Belgium, as the returns are not classified by age and civil condition in combination. The same holds true, apparently, for occupation, but the few data available and the figures for suicide rates in different districts suggest that by far the higher rates are found amongst the lower and the industrial classes.

The information given in the international section is a little scrappy, and might, we think, have been made more complete and up to date. Of the figures given incidentally, those contrasting the rates in the Catholic and Protestant cantons of Switzerland, cited from the *Statistique de la Suisse*, are most interesting; both in industrial and in agricultural districts the suicide rate for Catholics is very much lower than that of Protestants.

Considered from the international standpoint, the rate of suicide in Belgium is moderate, but higher than in this country. M. Jacquart refuses to attach much weight to the rate in this country (p. 61 and p. 85), as he holds it to be in defect, seeing that "the authorities charged with making the inquest in cases of suicide are disposed to admit, in every case which leaves room for doubt, accident or mental alienation as the cause of death." A death is, however, classified as a suicide in the Registrar-General's returns whether the coroner's jury finds a verdict of *felo de se* or of *suicide whilst of unsound mind*, and there is not the slightest reason for believing, so far as we can see, that the returns for England and Wales are more deficient than those of any other European country.

The subject of this essay is likely to attract some attention in this country in the near future, as the rate has increased with great rapidity during recent years, and some of the data collected by M. Jacquart are useful for reference. The work is, however, rather slight, and might have been rendered more useful without increase of size by replacing some tables giving absolute numbers of suicides by tables giving the corresponding rates, and older by more recent data. G.U.Y.

21.—*Outlines of the Economic History of England: a Study in Social Development.* By H. O. Meredith, M.A., M.Comm. viii + 366 pp., 8vo. London: Sir Isaac Pitman and Sons, 1908.

The appearance of this volume may with good reason, we think, afford encouragement to all who are interested in the accurate and fruitful study of the economic history of this country. The mere circumstance that there is a sufficient demand on the part of the general public for a fresh addition of the high quality of the book before us to the shorter accounts which have been written of the social development of England is in itself a matter for real satisfaction; and when we can proceed to state, as in this instance, that, despite of the modest language in which the Preface has been couched, the competent author of this new "study" has been able to shed fresh illumination on some points of great importance, in the course of his comprehensive treatment of the successive stages of our past commercial and industrial advance, we may feel confident that economic history has now made good its title here to the claim of having definitely become a recognised department of progressive learning.

Of Mr. Meredith's mastery of his subject in all its various branches no careful reader of this book can entertain a doubt; and it would not, we think, be possible to dispute its usefulness to teacher and to student. In its preparation he has availed himself of the very latest material which is accessible to assiduous research; and he has exercised on the authorities he has used the wise discrimination of a calm and matured but acute and independent judgment. In consequence he has been led, as we should expect, to modify or to redistribute some at any rate of the emphasis assigned to persons or events in preceding treatises; and to recast or rearrange in detail some of the accounts of different episodes or movements furnished by previous writers. He has been enabled in some portions of the narrative to introduce new salient facts or to suggest fresh valid inferences; and he has made, in our judgment, no unsubstantial contribution to existing stores of exact historical information. It is possible indeed that Mr. Meredith himself, and he would probably be the first to admit this doubt, may not have reached finality; but on the other hand we are certain that no serious student can afford to disregard, if he is not prepared in every instance to accept, what he has urged by way either of supplement or emendation. We may, perhaps, think that in the characteristic temper of many, and, it may be most, historians of a modern type he may, as for instance in his critical remarks on the ideas of the Mercantilist writers, have reduced contrasts emphasised before to such eviscerated bulk and such shadowy expression, that the reader may be left with too little to take hold of firmly as a necessary aid to retentive recollection. We may even suspect that his verdict on the practice of statesmen of the same general belief may not be always wholly freed from the subtle predisposing influence of his own present fiscal creed. We may hold that in consequence of the very fulness of the detailed erudition, with which he is equipped, his "sketch" may be found to be more suited for students, more or less advanced, than for mere beginners; and perhaps it may even prove of greater service to instructed teachers than to unassisted pupils. For it appears to us in parts, at any rate, to assume some previous knowledge and to be a little difficult to follow. But on the other hand he has, we would repeat in conclusion, made a contribution to the scrutiny and elucidation of the economic history of this country, which will, we think, take rank above the inferior level of an elementary handbook designed for the consumption of an uninformed public; for it deserves and, we are confident, will receive the attention of a higher and more appreciative class of students, who are prepared to expend some pains upon the books they read. L.L.P.

22.—*The Evolution of Modern Germany.* By William Harbutt Dawson. xvi + 503 pp., 8vo. London: T. Fisher Unwin, 1908.

When comparisons are frequently being made between the economic, social and political conditions of the United Kingdom on the one hand, and Germany and other countries on the other, a book that deals dispassionately and informatively with any aspect of the matter at issue is to be welcomed. Such a book is Mr. Dawson's *The Evolution of Modern Germany.* It is not only historical, in that it describes "the transformation of the Germany of half a century ago into the Germany which we know to-day," it also presents a detailed photograph, as it were, of the German nation as it actually exists. In reading the pages of the book, one is made to recognise how inevitable it has been that Germany should develop from an almost purely agricultural country, to a keen industrial nation, successfully competing with other Powers in the markets of the world. And Mr. Dawson has no difficulty in discovering the reasons of Germany's success. Science and education on the one hand, and thoroughness and adaptability on the other, tell almost the whole story. "The most impressive fact about technical education as developed in Germany is its comprehensiveness; it is applied to every occupation in which it is better for a workman to have it than be without it" (p. 97). Her "strength in manufactures and trade, as in so many other things, lies in attention to little things," while her producers and merchants seek to adapt their services to the utmost requirements of their customers (pp. 86 and 87). The fostering care of the Imperial and State Governments, and the "less pretentious" standard of life of the German working-man, have, too, had their not inconsiderable share in promoting Germany's success. But the latter factor, at least, is rapidly losing its significance. For the German workman is ceasing to be the docile servant of his master. Trade unions are fast gaining ground, and are infusing into the workmen a spirit of independence and a desire for better remuneration and shorter hours of work, almost totally absent from the German of a generation ago. So strong has trade unionism become that capital has been forced to organise itself in self-defence, and the relationship between the two is described as "one of extreme tension, and in some industries of extreme bitterness" (p. 107). Yet, after all, labour in Germany is only just awakening to the knowledge of its full power, and is still inferior in organisation to labour in the United Kingdom. Moreover, methods of conciliation and arbitration are not developed in Germany as they are in this country.

Mr. Dawson deals with many more subjects than those here touched upon. The growth and present extent of cartells and syndicates, of co-operation, and of State enterprise; the problem of rural depopulation (for Germany has such a problem); colonial expansion; socialism: these are some of the further questions introduced and discussed with much knowledge, and from a sound point of view.

It is only in a few matters of detail that we find fault with Mr. Dawson. For example, we dissent from the view that State enterprises release "a vast amount of private effort and capital" (p. 208), since the only effort and capital available for the State to use are, for the most part, those of its private citizens. Again, is there not some incongruity between the statement on p. 313 that "it may be accepted as a general rule that the rate of infantile mortality is proportionate to the general standard of civilisation prevalent," and that on p. 314, that there is to-day in Germany a "wastage" of infant life of 20 per cent. of the births, while "the rate a hundred years ago was only 15 per cent."? Has Germany's "standard of civilisation" declined in the interval? and what is the authority for the rate a century ago, and to what area does it apply? A.D.W.

23.—*School reports and school efficiency.* By David S. Snedden, Ph.D., and Wm. H. Allen, Ph.D., for the New York Committee on Physical Welfare of School Children. 183 pp., 8vo. The Macmillan Co., 1908. Price, in England, 6*s.* 6*d.*

The Committee on Physical Welfare was organised in May, 1906, to study facts, and this book is one of the results. It represents a great deal of work; it would be unjust to say much cry and little wool. It might have been made the basis of a most excellent treatise on the method of presenting reports in statistical form, and, although the knowledge and facts are to be found by the searcher, the book itself is not entirely above the very faults it criticises.

The annual reports of an education or any other administrative authority should be so intelligently drawn up that changes and progress of administrative details are concisely set out in such form that they are readily appreciated, and are available for comparison with other places or periods. Whilst it is necessary to preserve the greatest flexibility in the subject matter of reports, yet certain quantities require regular presentation; and it ought not to be difficult to draw up in some standard way leading tables which would represent educational methods and provisions, with their relative cost.

A large feature of American educational reports, however, is waste of paper, as in the publishing of long lists of teachers' names, and other equally valueless and uninteresting detail. The statistical presentation of facts are often equally useless. Because the force of custom is strong, it is not unusual to find that extensive tables are published year after year, even though the reason for their original publication no longer holds. Not unfrequently, as a result, the city report contains extensive tables that are probably never examined by a member of the Board of Education or by a citizen. Worse than this, the tables presented are often simply masses of figures put together in such a fashion, and so lacking in condensed interpretations, that the average reader is not able to extract from them the information that they are supposed to convey. The aims of school reports may be:—

A re-statement of the facts and figures collected for State or national statistics.

To present statistics of education or other social phenomena in such a way as to interest or appeal primarily to the student.

For the use of the administrative staff of the school system.

Publicity, so that the layman of average intelligence, but of more than average interest, may have the intelligence he seeks.

The ends of efficient publicity, so far as laymen are concerned, can be met only by the adoption of a special method designed for this purpose; not only must facts be presented statistically, but they must be so presented as to disclose their significance, even to the hurried reader. The publicity aim is the one that must mainly determine the form of presentation.

The majority of reports, say the authors, conspicuously fail to provide statistical information, either to the layman or administrator. They illustrate a striking phase of inefficiency in American municipal administration. All kinds of reports are discussed. Attention is drawn to points generally missed, but the authors do not refer to the mistake most obviously apparent hitherto in published statistics of school children, namely, that in all physical conditions the unit alters so with age and sex, that any figures applying to school children, in respect to physical characteristics, are valueless, unless they afford data as to age and sex distribution.

Although its terms and standards are in many respects very different from those in England, yet the book is an unselfish attempt to study statistical forms, and the mere points illustrated are of interest, calling to mind that in many of these matters there is a beam in our own eye. J.K.

24.—*Other New Publications.**

Barrington (*Amy*) and *Pearson* (*Karl*). A first study of the inheritance of vision and of the relative influence of heredity and environment on sight. (*Francis Galton Eugenics Laboratory Memoirs*, V.) 62 pp., 4to. London: Dulau, 1909. 4*s.*

Bosanquet (*Helen*). The Poor Law Report of 1909: a summary explaining the defects of the present system and the principal recommendations of the Commission, so far as relates to England and Wales. 264 pp., 8vo. London: Macmillan, 1909. 3*s.* 6*d. net.*

Bowles (*T. Gibson*). National finance in 1908 and after. 52 pp., 8vo. London: Fisher Unwin, 1908. 1*s.* net.

["Being a review of the past, a forecast of the future, an appeal for true accounts, a plea for retrenchment, a protest against debt, and a warning against false taxation."]

Burbury (*S. H.*). On the law of probability for a system of correlated variables. (Reprinted from the *Philosophical Magazine*, January, 1909.) 28 pp., 8vo. London: 1909.

Contento (*Aldo*). Teoria statistica generale e demografica (Piccola biblioteca scientifica XVI.). 12mo. Milan: Societá Editrice Libraria, 1909.

Darbishire (*A. D.*). Some tables illustrating statistical correlation. (Reprinted from *Memoirs of the Manchester Literary and Philosophical Society.*) 21 pp. and plates, 8vo. 1907.

[Contains a verification of the laws of correlation by means of experiments tried with instruments of pure chance (dice) after the manner initiated by the late Professor Weldon (see *Encyclopædia Britannica:* Supplement. 9th edition: Art. "Error, Law of"; see also, in early numbers of the *Journal*, some elementary trials with instruments of chance made by Dr. Guy.)]

Davidson (*John*) and *Gray* (*Alexander*). The Scottish Staple industry at Veere: a study in the economic history of Scotland. xii + 454 pp. London: Longmans, Green, 1909. 12*s.* 6*d.* net.

[An account of the organisation for the development of the foreign trade of Scotland, which was located at Lampvere (Veere), with some intervals, from 1506 to 1799.]

Eberstadt (*Rud.*). Handbuch des Wohnungswesens und der Wohnungsfrage. Mit 90 Textabbildungen. 412 pp., 8vo. Jena: Gustav Fischer, 1909. 9*s.*

Foot (*Alfred*). The practice of insurance against accidents and employers' liability; being lectures delivered at the London School of Economics, the Insurance Institute, &c., 1906-7. 2nd edition. 216 pp., 8vo. London: Smith and Ebbs, 1909. 5*s.*

Gibson (*A. H.*). Bank rate: the Banker's *Vade Mecum.* 2nd year of publication, 1st January, 1909. 70 pp., 8vo. London: Simpkin, Marshall, 1909.

[The first issue was reviewed in the *Journal*, September, 1908, page 560.]

Haffner (*A.*). Das Notenbankwesen in der Schweiz, England und Deutschland. 160 pp., 8vo. Leipzig: W. Kohlhammer, 1908. 3 marks.

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* See also "Additions to the Library," pages 161 *sqq.*

Halle (*E. von*). Die Weltwirtschaft: ein Jahr- und Lesebuch. III. Jahrgang 1908. 1. Teil: Internationale Übersichten. 150 pp., 4to. Leipzig: B. G. Teubner, 1908.

[A review of politics, trade, production, finance, traffic, insurance, &c., by various writers.]

Hasenkamp (*Adolf*). Die wirtschaftliche Krisis des Jahres 1907 in den Vereinigten Staaten von Amerika. 96 pp., 8vo. Jena: Gustav Fischer, 1908. 2*s.* 6*d.*

Henry (*Charles*). Psycho-biologie et energétique: essai sur uniprincipe de méthodes intuitives de calcul. 216 pp., 8vo. Paris: A. Herman et Fils, 1909. 6 frs.

Honsig (*Heinrich*). Die Pensionversicherung: mathematische und tabellarische Entwicklung der Invaliden-, Witwen- u. Waisenpensionen, nach sämtlichen Darstellungsmethoden und auf den neuesten statistischen Grundlagen aufgebaut. 96 pp., 4to. Leipzig: Franz Deuticke, 1909.

Hooper (*E. Grant*). The German state insurance system for providing invalid and old age pensions. 30 pp., 8vo. London: Effingham Wilson, 1908. 1*s.* net.

Horrocks (*Joseph*). Railway rates: the method of calculating equitable rates and charges for merchandise carried on railways. In three parts. 486 pp., 8vo. London: Sonnenschein, 1909.

[Part 1. Definitions of services, liabilities, and obligations. Part 2. The method described. Part 3. The method illustrated by examples.]

Hutchins (*Miss B. L.*). The public health agitation, 1833-48. 154 pp., 8vo. London: Fifield, 1909. 2*s.* 6*d.* net.

[Lectures delivered at the London School of Economics in 1908, giving an account of the work of Sir Edwin Chadwick, Thomas Southwood Smith, &c.]

Ingenbleek (*J.*). Impôts directs et indirects sur le revenu: la contribution personnelle en Belgique; l'Einkommensteuer en Prusse; l'income-tax en Angleterre. 520 pp., 8vo. Bruxelles: Misch & Thron, 1908.

Knibbs (*G. H.*). On the influence of infantile mortality on birthrate. (Reprinted from the *Journal of the Royal Society of New South Wales*). 14 pp., 8vo. Melbourne: Commonwealth Bureau of Census and Statistics, 1908.

Lansburgh (*Alfred*). Das deutsche Bankwesen; mit einer vergleichenden Statistik der Bilanzen aller deutschen Aktienbanken in den Jahren 1857-72—1907-08. 64 pp. + 8 folded tables. Berlin: Bank-Verlag, 1909. 5*s.*

Leroy-Beaulieu (*Paul*). Le collectivisme: examen critique du nouveau socialisme; l'évolution du socialisme depuis 1895; le syndicalisme. 5e édition augmentée. xxii + 710 pp., 8vo. Paris: Felix Alcan, 1909. 9 frs.

[The recently published English version of this work was reviewed in the *Journal*, December, 1908, page 729.]

Lifschitz (*F.*). Zur Kritik der Boehm-Bawerkschen Werttheorie. 116 pp., 8vo. Leipzig: Wilhelm Engelmann, 1908. 2 marks.

Loria (*Achille*). La sintesi economica: studio sulle leggi del reddito. 466 pp., la. 8vo. Torino: Fratelli Bocca, 1909. 12 lire.

Newsholme (*Dr. Arthur*). The prevention of tuberculosis. 430 pp., 8vo. London: Methuen, 1908. Price 10*s.* 6*d.*

[In 3 parts:—1, Causation; 2, Means by which the reduction of mortality already obtained has been secured; 3, Measures for reduction and annihilation.]

Phelps (*Edward Bunnell*). A statistical study of infant mortality. (Reprinted from the *Quarterly Publications of the American Statistical Association*, September, 1908.) 40 pp., 8vo.

Pugliesi (*Salvatore*). Due secoli di vita agricola: produzione e valore dei terreni, contratti agrari, salari e prezzi nel Vercellese nei secoli xviii e xix. 434 + 70 pp., 4to. Torino: Fratelli Bocca, 1908. 18 lire.

St. Clair (*Oswald*). Low wages and no wages: an essay on the economic causes of poverty, unemployment and bad trade. 240 pp., 8vo. London: Swann, Sonnenschein, 1908. 2*s.* 6*d.* net.

[Deals with the results of *laisser faire* as regards wealth production and distribution, &c.]

Saint-Léon (*Etienne Martin*). Histoire des corporations de métiers depuis leurs origines jusqu'à leur suppression en 1751, suivie d'une étude sur l'évolution de l'idée corporative de 1791 à nos jours et sur le mouvement syndical contemporain. 2e édition revue. 794 pp., 8vo. Paris: Felix Alcan, 1909.

Schmoller (*Gustav*). Die Entwicklung der deutschen Volkswirtschaftslehre im xix. Jahrhundert: Gustav Schmoller, zur 70. Wiederkehr seines Geburtstages, 24. Juni 1908, in Verehrung dargebracht von C. P. Altmann, W. J. Ashley, C. Gide, W. Lexis, von Philippovich, &c. 2 vols., la. 8vo. Leipzig: Duncker and Humblot, 1908.

Schumpeter (*Joseph*). Das Wesen und der Hauptinhalt der theoretischen Nationalökonomie. 626 pp., 8vo. Leipzig: Duncker und Humblot, 1908.

Seligman (*Edwin R. A.*). Progressive taxation in theory and practice. 334 pp., 8vo. Princeton, N.J.: American Economic Association, 1908.

[The 1st edition was reviewed in the *Journal*, December, 1894, page 723.]

——— L'impôt progressif en théorie et en pratique. Edition française augmentée par l'auteur. 344 pp., 8vo. Paris: Giard et Brière, 1909. 10 frs.

Spicer (*Ernest Evan*). An outline of the money market. 56 pp., 8vo. London: Gee, 1908. 2*s.* 2*d.* net.

Sykes (*Ernest*). Banking and currency. With an introduction by F. E. Steele. 2nd edition. xvi + 288 pp., 8vo. London: Butterworth, 1908. 5*s.*

Unwin (*George*). The gilds and companies of London. xvi + 398 pp., 8vo. London: Methuen, 1908. 7*s.* 6*d.*

["An outline of their continuous organic development from the days of Henry II."]

Withers (*Hartley*). The meaning of money. 308 pp., 8vo. London: Smith Elder, 1909.

[An account of the money market for general readers; advocates the establishment of a connection between Bank-rate and market-rate, and a greater publicity of banking accounts.]

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UNITED KINGDOM—

Accountants' Magazine, 1909—

January—Town finance: *Leishman* (*James*).

February—Notes and impressions of the Far East: *Stewart* (*R. Sydney*). Investment of factorial and trust funds.

March—Shipping accounts: *Macdonald* (*Malcolm*).

Bankers' Magazine, 1909—

January—The banking half-year. The Australasian banks. American banking and finance. How to calculate the profit on a current account.

February—Progress of banking in Great Britain and Ireland. Credit and trade. An exceptionally interesting amalgamation. Comparative studies of bank reports. The American outlook in 1909: *Lawson* (*W. R.*). The Egyptian currency. The disappearing trustee savings bank.

March—Trade and banking conditions in Scotland. Stock Exchange values. Educational section:—The law of bankers' guarantees; the Gilbart lectures. Australasian banking returns.

Economic Journal. March, 1909—Proposals for an economic survey of the United Kingdom: *Macrosty* (*H. W.*). Statistics of railway costs: *Wedgwood* (*R. L.*). The present state of the land system in France: *Dumas* (*Jacques*). Recent economic events in India: *Keynes* (*J. M.*). The present position of the Irish land question: *Bastable* (*Prof. C. F.*). An iron sliding scale: *Evans* (*A. Dudley*). A note on the incidence of protective import duties: *Chapman* (*Prof. S. J.*). The Greek census: *Andréadès* (*Prof. A.*). Report of the Royal Commission on the Feeble-Minded: *Hamilton* (*C. J.*).

Economic Review. January, 1909—The Indian exchange: *Barker* (*D. A.*). The working of wages boards: *Phillips* (*Miss M. E.*). The past, present, and future of the movement for tariff reform: *Price* (*L. L.*). The old-age pension scheme: *Ehrlich* (*Prof. Dr. Eugen*). The care and control of the feeble-minded: *Atkinson* (*Dr. Stanley B.*).

Financial Review of Reviews, 1909—

January—Professor Marshall's memorandum on fiscal policy: *Crozier* (*J. Beattie*). Geographical distribution of capital: *Bramer* (*Prof. Karl*). The rationale of depreciation: *Hudson* (*H. K.*). The resources of the French investor: *Guyot* (*Yves*).

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Financial Review of Reviews, 1909—*Contd.*

February—McKinley, Roosevelt, and Taft: a comparison and a forecast: *Moore* (*G. G.*). The beneficial effect of international investment on British trade: *Fithian* (*Sir Edward W.*). The growth of investment knowledge: *Lawson* (*W. R.*). Scientific investment in daily practice: *Rolleston* (*Sir J. F. L.*).

March—Investment anomalies in South America: Argentina and Brazil compared: *Elcho* (*Lord*). "All about investment": *Nicholson* (*J. Shield*). Do foreign investments benefit the working classes?: *Hobson* (*J. A.*). Scientific investment illustrated: *Rolleston* (*Sir John*). A German view of the principle of geographical distribution: *Obst* (*Dr. Georg*).

Journal of the Board of Agriculture, 1908—

December—Notes on crop prospects abroad. Earnings at corn harvest in 1908. Prices of agricultural produce, &c.

January, 1909—Expenses of corn harvesting: *Mackenzie* (*K. J. J.*). Salford cattle market: *Clarke* (*Joseph*). Statistical tables, &c.

February—A demonstration of intensive cultivation: *Dunstan* (*M. J. R.*). Report on Afforestation. State assistance to agriculture in Switzerland. Credit banks in Austria.

March—The corn markets in February: *Kains-Jackson* (*C.*). The live and dead meat trade in February: *Matthews* (*A. T.*). The provision trade in February: *Stevens* (*Hedley*).

Journal of Department of Agriculture, &c., for Ireland. January, 1909—Tobacco growing in Ireland: *Keller* (*G. N.*). Display of Irish agricultural produce in the United Kingdom, 1908.

Journal of Institute of Actuaries. January, 1909—Opening address by the President: *Hardy* (*G. F.*). "On the methods of ascertaining the rate of mortality amongst the general population of a country, district, or town, or amongst different classes of such population, by means of returns of population, births, deaths, and migration": *Wickens* (*Chas. H.*).

Journal of the Institute of Bankers, 1909—

January—Proposed international conference on the unification of the laws of bills of exchange in different countries. The law of bankers' guarantees: *Campion* (*Bernard*). Cotton Bills of Lading Conference, 1907.

February—The New York negotiable instruments law: *Chalmers* (*Sir Mackenzie*). The law of bankers' guarantees, lecture 2: *Campion* (*Bernard*). The work of the London Bankers' Clearing House during 1908.

March—Proposed international conference on the unification of the laws of bills of exchange in different countries. Gilbart lectures, 1909: *Paget* (*Sir J.*).

Journal of the Royal Colonial Institute, 1909—

January—Oxford and the Empire: *Egerton* (*Prof. H. E.*).

February—Rhodesia and its agricultural possibilities: *Wallace* (*Prof. Robert*).

March—Canada's new trans-continental railway: *Osborn* (*E. B.*).

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Journal of the Statistical and Social Inquiry Society of Ireland. December, 1908—Memoir of John Kells Ingram: *Falkiner* (*C. L.*). Facilities for investing in Consols: *Stanuell* (*Charles*). A plea for Irish mines and minerals under the Irish Board, and for preparation of a mining survey: *Geoghegan* (*H. C.*). Two centuries of Irish agriculture: a statistical retrospect, 1672-1905: *Chart* (*D. A.*). The economics of industrial revival in Ireland: *Oldham* (*C. H.*).

Surveyors' Institution. Transactions. Session 1908-09—

Part III—Agricultural co-operation in connection with small holdings: *Eggar* (*J. A.*).

Part IV—Discussion on a paper on the administrative aspects of sewage disposal: *Scoble* (*Herbert T.*).

Part V—A paper on the ordnance survey: *Johnston* (*Col. Sir Duncan Alexander*).

Part VI—The Irish land bill, 1908: *Hewson* (*C.*).

Part VII—Practical English estate forestry: *Duchesne* (*Martin Collier*).

Royal Philosophical Society of Glasgow. Proceedings. Vol. 39. 1907-08—The punishment and prevention of crime: *Stevenson* (*J. V.*). Fluctuations of the building trade, and Glasgow's house accommodation: *Fraser* (*William*).

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American Journal of Sociology. January, 1909—Industrial insurance: *Henderson* (*C. R.*). Municipal review, 1907-08: *Woodruff* (*C. R.*).

American Statistical Association. Quarterly Publications. December, 1908—Uniformity and co-operation in the census methods of the republics of the American continent: *North* (*S. N. D.*). Occupation mortality statistics of Sheffield, England, 1890-1907: *Crum* (*F. S.*). Standardization of housing investigations: *Commons* (*John R.*). Devices for avoiding error: *Holmes* (*George K.*). The cost of municipal government in Massachusetts: *Hartwell* (*Edward M.*).

Annals of American Academy of Political and Social Science, 1909. *January*—Contains a series of papers by different authors on industrial education.

Bankers' Magazine (*New York*), 1908—

December—Corporations as borrowers: *Stevenson* (*C. W.*). The dollar mark: *Edmonds* (*John*). The savings bank as an institution: *Kniffin* (*W. H.*). The banking system of Mexico: *Conant* (*C. A.*).

January, 1909—Banking in Pittsburgh. Mexico's credit institutions: *Casasus* (*J. D.*). How savings banks figure interest: *Ekirch* (*A. A.*).

February—Beginnings of the great banking systems of to-day—English banking historically described: *Lawson* (*W. R.*). Building and loan associations: *Theis* (*H. A.*). The organisation of a savings bank: *Kniffin* (*W. H.*). Mexico's credit institutions: *Casasus* (*J. D.*).

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Bankers' Magazine (*New York*), 1909—*Contd.*

March—Mexico's credit institutions: *Casasus* (*J. D.*). Canadian banking and commerce: *Eckardt* (*H. M. P.*). The new Baltimore: *White* (*Edward*). The relationship of the clearing houses of the United States and Canada to the question of exchange: *Gardner* (*James P.*).

Bulletin of the Bureau of Labor, 1908. *No.* 78. *September*—Industrial accidents: *Hoffman* (*F. L.*). Mexican labor in the United States: *Clark* (*Victor S.*). Cost of living of the working classes in the principal industrial towns of the German Empire. British Old-Age Pensions Act of 1908. Digest of recent reports of state bureaus of labor statistics.

Journal of Political Economy, 1909—

January—The impending tariff struggle: *Willis* (*H. Parker*). History of the employment of women in the American cotton mills: *Abbott* (*Edith*).

March—French unionism militant: *Skelton* (*O. D.*). Land tenure and land monopoly in New Zealand: *Stewart* (*W. D.*). Cost of production as a basis of tariff revision: *Cummings* (*John*).

Political Science Quarterly. December, 1908—Popular legislation in the United States. Instruction in public business: *Allen* (*W. H.*). The causes of poverty: *Brandt* (*Lilian*). Marxism *versus* socialism. II: *Simkhovitch* (*V. G.*). The manorial system and the revolution: *Sait* (*E. M.*).

Quarterly Journal of Economics. February, 1909—A year after the panic of 1907: *Noyes* (*A. D.*). On the concept of social value: *Schumpeter* (*Joseph*). Recent and prospective state banking legislation: *Jay* (*Pierre*). The financial system of the mediæval papacy in the light of recent literature: *Lunt* (*W. E.*). The present period of income-tax activity in the American states: *Kinsmon* (*D. O.*).

AUSTRIA-HUNGARY—

Statistische Monatschrift, 1908—

November—Das Institut der sogenannten bedingten Verurteilung: *Forcher* (*H.*). Beiträge zur Statistik der Binnenfischerei in Österreich: *Mokry* (*T.*).

December—Die Ergebnisse eines Kinderstatistik in Brünn: *Feith* (*Dr.*). Die Bevölkerungsbewegung in Australien im Jahre 1907: *Pflügl* (*R. von*).

FRANCE—

Annales des Sciences Politiques. January, 1909—Le mouvement des salaires: *Levasseur* (*E.*). L'autonomie des ports de commerce: *Lecarpentier* (*G.*). Les Saint-Simoniens et les chemins de fer; l'exécution du réseau: *Wallon* (*M.*) Une expérience américaine; la garantie des dépôts de banque: *V.* (*A.*) Chronique internationale (1907): *Gidel* (*G.*)

Bulletin de Statistique, Ministère des Finances—

November, 1908—Le commerce extérieur en 1907: France et Algérie. Produits des droits sur les boissons pendant les neuf premiers mois de 1908. Allemagne: les projets de reforme financière. Angleterre: les résultats de l'année financière 1907-08.

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December, 1908—Les bilans des budgets depuis 1871. Les fabriques de sucre et leurs procédés de fabrication. Les revenus de l'état: contributions directes et taxes assimilées. Russie: résultats definitifs de l'exercice 1907.

January, 1909—Les revenus de l'état. Le commerce extérieur. Les indices économiques. Le commerce extérieur de la France pendant l'année 1908. Production des vins et des cidres en 1908. Achats et ventes de rentes effectués par l'intermédiaire des comptables du trésor.

Journal des Économistes, 1909—

January—"1908": *Molinari* (*G.*). Le marché financier en 1908: *Raffalovich* (*A.*). Un nouveau monopole d'état: *Guyot* (*Yves*). Le fonctionnarisme et les pensions de retraite: *Rouvray* (*Jacques*).

February—La révision douanière: *Nourion* (*Georges de*). L'état entrepreneur de transports maritimes et fluviaux: *Bellet* (*Daniel*). Mouvement agricole: *Molinari* (*Maurice*). La crise économique allemande de 1907-08: *Huart* (*Albin*). Le capitalisme: *Passy* (*Frederic*).

March—L'échange imposé; l'impôt, ses applications et son incidence: *Molinari* (*G. de*). La politique du pain cher: *Schelle* (*M.*). Le service médical dans l'assurance ouvrière: *Bellom* (*Maurice*). Mouvement scientifique et industriel: *Bellet* (*Daniel*). Revue de l'Académie des sciences morales et politiques: *Lefort* (*J.*). Travaux des chambres de commerce: *Rouxel* (*M.*).

Journal de la Société de Statistique de Paris, 1909—

January—Jubilé de M. Levasseur. La propriété non bâtie, les îlots fonciers, valeur vénale et revenu: *Malzac* (*M.*). La démocratisation de la vitesse: *Meuriot* (*Paul*). Nécrologie: Ch.-Th. von Inama-Sternegg: *F.* (*A. de*).

February—Répartition des auteurs des successions suivant leur âge; intervalle moyen des mutations successives: *March* (*Lucien*). Note sur le déclassement des voyageurs des réseaux français: *Bernard* (*J.*). Les progrès économiques des pays scandinaves: *Cadoux* (*G.*). Chronique trimestrielle des banques, changes, et métaux précieux: *Roulleau* (*G.*).

La Réforme Sociale—

16*th December*, 1908—La population et les lois successorales: *Thaller* (*E.*). L'œuvre des villes anglaises dans la lutte contre l'insalubrité de l'habitation: *Renoir* (*M.*). La veillée; abus et responsabilités: *Juillerat* (*Mme. A. P.*). Chronique du mouvement social.—Allemagne et Autriche-Hongrie: *Blondel* (*Georges*).

1*st January*, 1909—La Société d'économie sociale; le comité de défense et de progrès social; les unions de la paix sociale. La petite propriété française et la loi du 10 avril, 1908: *Ribot* (*M.*). La question du sixième étage: *Rey* (*A. Augustin*).

FRANCE—*Contd.*

La Réforme Sociale—Contd.

16*th January*—Les faveurs pécuniaires et les familles nombreuses: *Bertillon* (*Dr. Jacques*). Les salaires et les impôts dans une colonie française: *L.* (*A.*).

1*st February*—Les institutions politiques et les partis ouvrières en Suisse: *Jobin* (*M.*). Le mouvement de la population en Allemagne: *Dorff* (*Alfred*). Notre natalité se relève-t-elle? *Bertillon* (*Docteur*).

16*th February*—Les syndicats agricoles et le projet de loi déposé par le ministre de l'agriculture: *Doin* (*Paul*). Quelques aspects nouveaux de la crise du mariage et de la famille: *Montégut* (*Robert de Boyer*). Le mouvement de la population en Allemagne.—La nuptialité: *Dorff* (*Alfred*). Le programme social des partis politiques en Angleterre: *Bardoux* (*Jacques*).

1*st March*—Les jardins ouvrières à la campagne: *Rivière* (*Louis*). L'esprit nouveau et la legislation du travail: *Hubert-Valleroux* (*M.*). Le mouvement de la population en Allemagne.—Natalité et fecondité: *Dorff* (*Alfred*). La loi de 1908 sur la petite propriété.—Observations critiques et propositions de réforme: *Fourdinier* (*J.*). A propos des retraites ouvrières.

Revue d'Économie Politique—

November—December, 1908—Causes determinantes du taux des salaires: *Levasseur* (*E.*). L'assurance contre le chômage: *Bellom* (*M.*). Le féminisme en Nouvelle-Zélande: *Chamier* (*Miss F.*).

January, 1909—Étude expérimentale de travail professionel ouvrier: *Imbert* (*Dr. A.*). Quelques résultats de la loi du 27 décembre, 1892, sur la conciliation et l'arbitrage: *Picard* (*Maurice*). Valeur vénale de la propriété rurale; période 1851-1905: *Michel* (*E.*). Le régime des syndicats agricoles: *Hitier* (*Joseph*).

February—La réalité des surproductions générales.—Essai d'une théorie des crises générales et periodiques: *Aftalion* (*Albert*). L'assurance contre le chômage: *Bellom* (*Maurice*). Chronique des transports et travaux publics: *Porte* (*Marcel*).

GERMANY—

Archiv für Rassen- und Gesellschafts-Biologie. January—February, 1909—Zur Bedeutung der Mehrlingsgeburten für die Frage der Bestimmung des Geschlechts: *Weinberg* (*Dr. Wilhelm*). Lebensdauer der Eltern und Kindersterblichkeit: *Ploetz* (*Dr. A.*). Die Aussichten der Indianerbevölkerung Guatemalas: *Sapper* (*Dr. Karl*). Rekrutierungsstatistik: *Meisner* (*Dr. Hugo*). Die abnehmende Kriegstüchtigkeit in Deutschland in Stadt und Land von 1902 bis 1907: *Claassen* (*Dr. Walter*). Reichsfinanzreform und Rassentuchtigkeit: *Nordenholz* (*Dr. Anastasius*). Determination of dominance in Mendelian inheritance: *Davenport* (*Ch.*). Das Problem der Lebensdauer und seine Beziehungen zu Wachstum und Ernährung: *Rubner* (—).

GERMANY—*Contd.*

Archiv für Sozialwissenschaft und Sozialpolitik, 1909—

January—Zur sozialwissenschaftlichen Begriffsbildung: III. Geschichte und Sozialwissenschaft: *Gottl-Ottlilienfeld* (*Prof. Fr. von*). Der staatssoziallistische Charakter der Sozialdemokratie: *Nieuwenhuis* (*F. D.*). Die Formen der Arbeiterbewegung in Frankreich: *Weill* (*Dr. Georg*). Schiedsgerichte und Lohnausschüsse in Australien: *Schachner* (*Prof. Robert*).

March—Die Einheitsbestrebungen im französischen Sozialismus: *Louis* (*Paul*). Der englische Gesetzentwurf zur Regelung der Schwitzgewerbe: *Schachner* (*Dr. Robert*).

Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft (*Schmoller's*), *Heft* 1, 1909—Historische Betrachtungen über Staatenbildung und Finanzentwicklung: *Schmoller* (*Gustav*). Die Kommissionsverwaltung in England: *Pollock* (*Sir Frederick*). Alte und neue Landesvertretung in Deutschland: *Rachfahl* (*Felix*). Die Einkommengestaltung als Geldwertbestimmungsgrund: *Zwiedineck* (*Otto*). Geschichte der sozialen Politik und des Armenwesens im Zeitalter der Reformation: *Feuchtwanger* (*L.*). Der deutsche Holzarbeiterverband. Verfassung und Verwaltung einer modernen Gewerkschaft: *Cassau* (*Theodor*). Untersuchungen an neuem Material zur Frage des Knabenüberschusses der Geborenen: *Grünspan* (*Arthur*).

Jahrbücher für Nationalökonomie und Statistik (*Conrad's*), 1909—

January—Grundsätzliches und Tatsächliches zur Wertzuwachssteuer: *Stier-Somlo* (—). Betreibskonzentration und Kleinbetrieb in der englischen Industrie: *Brodnitz* (*Georg*). Oeffentliche Säuglingsfürsorge und Sterblichkeitsstatistik: *Seutemann* (*Karl*). Die Methode der englischen Streikstatistik: *Abelsdorff* (*Walter*).

February—Streiks in den Vereinigten Staaten: *Jones* (*C. Ll.*). Zur Reform der Streikstatistik: *Meyer* (*Maximilian*). Ein Beitrag zur historischen Lohnstatistik der häuslichen Dienstboten: *Most* (*Otto*). Zur internationalen Finanzstatistik: *Plenge* (*Johann*).

Vierteljahrshefte zur Statistik des Deutschen Reichs, 1909. *Heft* 1—Krankenversicherung (1903 bis 1907). Zur Statistik der Preise. Erntestatistik für 1908. Seeverkehr in den deutschen Hafenplätzen 1907. Seereisen deutscher Schiffe, 1907. Eheschliessungen, Geburten und Sterbefälle, 1907. Die Selbstmorde, 1893 bis 1907. Die überseeische Auswanderung, 1908. Vergleichende Darstellung zwischen der Kraftfahrzeugbestands- und Unfallstatistik. Die Bestands- und Kapitaländerungen der deutschen Aktiengesellschaften und Kommanditgesellschaften auf Aktien, 1908. Bei deutschen Börsen zugelassene Wertpapiere, 1908. Branntweinbrennerei und Besteuerung, 1907/1908. Hauptergebnisse der Viehzählung, 1907.

GERMANY—*Contd.*

Zeitschrift des Königlich Preussischen Statistischen Landesamts, 1908—

Abth. III—Volkszählungsergebnisse von 1905 in Preussen: *Broesike* (*Dr. Max*). Die Taubstummen und Blinden in Preussen: *Guttstadt* (*Dr. Albert*). Die preussischen Sparkassen im Rechnungsjahre 1906: *Evert* (*G.*). Die Ergebnisse der Warenhaussteuer-Veranlagung in Preussen in den Jahren 1904 bis 1907: *Kühnert* (*Dr. F.*).

Abth. IV—Die Geburten, Eheschliessungen und Sterbefälle im preussischen Staate während des Jahres 1907. Die Polen im westlichen Preussen, 1905: *Broesike* (*Max*). Das Kapitalvermögen der selbständigen Landwirte in Preussen: *Kühnert* (*Dr. F.*). Die langfristigen Anleiheschulden der preussischen Landkreise am Schlusse des Rechnungsjahres 1903: *Tetzlaff* (*Dr. Oskar*).

Zeitschrift für die gesamte Staatswissenschaft. Heft 1, 1909—Ueber den Staatsbegriff: *Rosenberg* (*Werner*). Kritisches und Positives zur Preislehre. II. Theoretisch vernachlässigte Preisbestimmungsgründe: *Zwiedineck* (*Orro*). Das Wesen der Selbstverwaltung: *Beyer* (*B.*). Gemeindezeitungen in Deutschland und Oesterreich: *Kootz* (*Robert*). Die Arbeitgeberverbände in der Schweiz: *Schaeffer* (*A.*). Die Finanzen der österreichischen Gewerkschaften: *Fehlinger* (*H.*).

Zeitschrift für Versicherungs-Wissenschaft. January, 1909.—Deutsche Privatbeamtenversicherung: *Rasp* (*Dr.*). Die Förderung des Wohnungsbaues durch die Arbeiterversicherungs: *Kehl* (*Dr.*). Eindrücke vom VIII. Internationalen Arbeiterversicherungs-Kongress in Rom: *Manes* (*Prof.*) Fehlerausgleichung und Untersterblichkeit: *Bortkiewicz* (*Prof.*).

Zeitschrift für Socialwissenschaft, 1909—

Heft 1—Zur Frauenfrage: *Mayer* (*Adolf*). Das Getreidemonopol in der Schweiz: *Meyer* (*Albert*). Zwei Schriften zur Reichsfinanzreform: *Mayr* (*Georg von*). Die Altersrentengesetzgebung in Neuseeland, Australien und England: *Meltzing* (*O.*).

Heft 2—Die Entwicklung der Hygiene im letzten Vierteljahrhundert: *Gottstein* (*Adolf*). Zur Frauenfrage: *Mayer* (*Adolf*). Gegenwartserfahrungen und Zukunftsaussichten des Socialismus in den Vereinigten Staaten: *Lindsay* (*Martin*). Volk und Schule Preussens vor hundert Jahren und heute: *Münch* (*W.*).

Heft 3—Adam Smith und Adam Ferguson: *Oncken* (*August*). Landunterschleife in den Vereinigten Staaten: *Schultze* (*Ernst*). Zur Frauenfrage: *Mayer* (*Adolf*). Ist Alkohol ein Wahrungsmittel? *Rosenthal* (*Dr.*).

ITALY—

Giornale degli Economisti, 1908—

December—Leone Walras: autobiografia: *Pantaleoni* (*M.*). I primi anni di esercizio ferroviario di stato: *Trevisonno* (*N.*). Sur la legge dei piccoli numeri e la regolaritá dei fenomeni rari: replica ai Proff. L. V. Bortkewitsch e C. Bresciani: *Gini* (*C.*).

ITALY—*Contd.*

Giornale degli Economisti—Contd.

January, 1909—La situazione del mercato monetario negli ultimi cinque anni: (*X.*). Parole inaugurali dei lavori della sezione di economia e statistica al Congresso di Firenze: *Dalla Volta* (*R.*). Il diverso accrescimento delle classi sociali e la concentrazione della ricchezza: *Gini* (*C.*). Sulla scadenza della classe media industriale antica sul sorgere di una classe media industriale moderna nei paesi di economia spiccatamente capitalistica: *Michels* (*R.*). La cointeressenza degli impiegati nei proventi dei servizi pubblici: *Tangorra* (*V.*). I fenomeni demografici in relazione allo stato economico della popolazione: *Giusti* (*U.*). Sull'uso delle ipotesi nella demografia storica: *Fornasari di Verce* (*E.*).

February—Il monometallismo ed i cicli industriali: *Fanno* (*M.*). Il disegno di legge per modificazioni nella contabilitá dello stato: *Borzoni* (*L. Otto*). Sulla rappresentazione analitica delle curve statistiche: *Helguero* (*F. de*). Comuni e le abitazioni popolari in Germania: *Badoglio* (*R.*).

Riforma Sociale. January—February, 1909—Fatti argomenti intorno alla municipalizzazione: *Geisser* (*Alberto*). Nuovo progetto di legge sulle derivazioni ed usi di acque pubbliche: *Conti* (*Ettore*).

Rivista Italiana di Sociologia. November—December, 1908—Le leggi di associazione mentale nel diritto: *Miceli* (*V.*). Un movimento agrario nel cinquecento: *Leicht* (*P. S.*).

SWITZERLAND—

Journal de Statistique Suisse, 1909—

Lief 1—Die schweizerische Philanthropie anfangs des XX. Jahrhunderts.—Appenzell: *Anderegg* (*E.*) and (*H.*)

Lief 2—La réforme de la profession de sage-femme en Suisse. Die Eheschliessungen im Verhältnis zu den heiratsfähigen Männern, 1871-1900. Erhebungen über Vermögen, Schulden und Erwerb im Kanton Aargau, 1906/1907 (1892): *Kistler* (*J.*). Mortinatalité et mortalité infantile pendant les deux premiers jours de la vie, 1906.

QUARTERLY LIST OF ADDITIONS TO THE LIBRARY.

During the Quarter ended 15th March, 1909, the Society has received the publications enumerated below. The titles are arranged alphabetically by subjects (works of a general nature coming first) under the following heads:—(a) Foreign Countries; (b) India and Colonial Possessions; (c) United Kingdom and its Divisions; (d) Authors, &c.; (e) Societies, &c. (British); (f) Periodicals, &c. (British).

(a) Foreign Countries.

Argentine Republic—

Agriculture. Ministerio de Agricultura. Boletín mensual de estadística agricola. (Current numbers.) 8vo. 1908	The Ministry of Agriculture
Buenos Ayres (*Province*)—	
Boletín mensual de la Direccion General de Estadística. (Current numbers.) Fol. 1909	The Provincial Statistical Bureau
El Periodismo en la Provincia de Buenos Aires. Año 1907. 8vo. La Plata. 1908	
Cordoba (*Province*). Publicaciones de la Direccion general de estadistica y agricultura. Campaña agricola, 1907-08. 8vo. 1908	
Santa Fé. Boletín de estadística municipal. (Current numbers.) Fol. 1909	The Municipal Statistical Bureau
Banco Español del Rio de la Plata. Estadisticas comerciales y monetarias de los años 1905-06-07. Republica Argentina, Republica Oriental del Uruguay, España, Francia, Inglaterra, Italia. La. fol. 1908	The London Manager of the Bank

Austria-Hungary—

Österreichisches Wirtschaftspolitisches Archiv (vormals "Austria"). (Current numbers.) 8vo. 1909	The Ministry of Commerce
Statistisches Jahrbuch der autonomen Landesverwaltung. Jahrgang 7. 8vo. 1908	The Central Statistical Commission
Statistische Monatschrift. (Current numbers.) 1909	
Agriculture. Statistische Nachrichten aus dem Gesammtgebiete der Landwirtschaft. (Current numbers.) 8vo. 1909	
—— Anbauflächen und Ernteergebnisse der Wichtigsten Körnerfrüchte im Jahre 1908. 12 pp., 8vo. 1909	
Finance. Mitteilungen des k.k. Finanzministeriums. Jahrg. 14, Heft 3. 8vo. 1908 [Contains the statistics of the yield of the income tax for 1907.]	The Ministry of Finance
Fisheries. Beiträge zur Statistik der Binnen-Fischerei in Österreich . . . Statistik der Fischzuchtanstalten. 8vo. 1908	The Central Statistical Commission
Labour. Arbeitsstatistisches Amt. Protokoll der 23^{en} Sitzung des Arbeitsbeirates vom 22 Dezember 1908. 8vo. 1909	The Austrian Labour Department
—— Die Arbeitseinstellungen und Aussperrungen in Österreich während des Jahres 1907. 8vo. 1909	
—— Bleivergiftungen in hüttenmännischen und gewerblichen Betrieben. Ursachen und Bekampfung. Teil. 7. Fol. 1909	

(a) Foreign Countries—*Contd.*

Austria-Hungary—*Contd.*	
Labour. Mitteilungen des k.k. Arbeitsstatistischen Amtes im Handelsministerium. (Current numbers.) 8vo. 1909	The Austrian Labour Department
Mining. Statistik des Bergbaues in Österreich für 1906. Lief. 3. Gebarung und Ergebnisse der Krankheits-, Mortalitäts-, und Invaliditäts-Statistik der Bergwerksbruderladen im Jahre 1905. Fol. 1908	The Ministry of Public Works
—— Statistik des Bergbaues in Österreich für 1907. Lief. 2. Betriebs- und Arbeiterverhältnisse beim Bergbau. Naphthastatistik. 8vo. 1908	
Postal. Statistik des Österreichischen Post- und Telegraphenwesens im Jahre 1907. 8vo. 1908	The Ministry of Commerce
Public Health. Statistik des Sanitätswesens für das Jahr 1905. Fol. 1908................	The Central Statistical Commission
Trade. Statistik des Auswärtigen Handels des Vertragszollgebiets der beiden Staaten der Österr-Ungar Monarchie im Jahre 1907. Band i. (Spezialhandel.). Band ii. (Vormerkverkehr-Durchfuhr.). 2 vols., 8vo. 1908	The Ministry of Commerce
—— Statistik des Verkehrs in den im Reichsrate vertretenen Königreichen und Ländern für die Jahre 1902 bis 1905. 1. Abth.: Landstraszen, Wasserstraszen, Fluszschiffahrt. 4to. 1909	The Central Statistical Commission
Hungary. Commerce extérieur des pays de la sainte couronne hongroise en 1907. La. 8vo. 1908	The Central Statistical Bureau
Bohemia—	
Agriculture. Statistik der Ernte und der wichtigsten Zweige der landwirtschaftliche Industrie für die Betriebsperiode 1906-07. Teil 1. 8vo. 1908	The Statistical Bureau
Elections. Statistik der zu Beginn des J. 1908 im Königreiche Böhmen durchgeführten allgemeinen Landtagswahlen. 8vo. 1908	
Poor Relief. Das Armenwesen im Königreiche Böhmen am Anfang des xx Jahrhundertes. 8vo. 1908	
Budapest—	
Monatshefte des Budapester Communal-Statistischen Bureaus. (Current numbers.) 1909	The Municipal Statistical Bureau
Wochenausweis des Budapester Communal-Statistischen Bureaus. (Current numbers.) 1909	
Belgium—	
Agriculture. Recensement général de 1895. Partie documentaire. Tome 1. Répartition des Cultures. Amendements et engrais. Instruments agricoles. Semences employées par hectare. Rendements moyens. Production totale. Améliorations foncières. Tome 2. Dénombrement du betail. Naissances et pertes des principaux animaux agricoles. Denrées alimentaires du commerce pour le bétail. Tome 3. Salaire des ouvriers agricoles en 1890 et 1895. Population agricole en 1895 (depuis l'âge de 12 ans). Valeur vénale et locative des terres labourables et des prairies. Dénombrement des exploitations (bois exceptés). Tome 4. Répartition des bois et des terrains incultes. Produits des propriétés boisées (moyenne des annés 1892-93-94). 4 vols., la. 8vo. 1898-99	The Ministry of Agriculture
—— Recensement agricole de 1900-05, et 1907 (Partie documentaire). 7 vols., la. 8vo. 1901-08.	

(a) Foreign Countries—*Contd.*

Belgium—*Contd.*

Army. Statistique médicale de l'armée belge. Année 1907. 8vo. 1908	The Belgian Government
Births, &c. Statistique du mouvement de la population et de l'état civil en 1900. 4to. 1904	The Ministry of the Interior
Labour. Annuaire de la legislation du travail publié par l'Office du travail de Belgique. 11ᵉ Année. 1907. 8vo. 1908	The Belgian Labour Department
—— Rapports annuels de l'inspection du travail 13ᵐᵉ Année (1907). 8vo. 1908	
—— Monographies industrielles. Aperçu economique technologique et commercial. Groupes iii et xvii. Construction des machines et appareils electriques. 8vo. 1908	
—— Les industries à domicile en Belgique. Vol. 9. L'industrie de la lingerie à Bruxelles. Enquête sur les salaires dans l'industrie du vêtement pour hommes. 8vo. 1908	
—— Les industries à domicile en Belgique. Vol. 10. Etude statistique des familles ouvrières comprenant des ouvriers à domicile. 8vo. 1909 [An enquiry as to age, sex and numbers of a family engaged in home work. The inquiry covers some 61,000 families and some 112,000 workers.]	
Mines. Annales des Mines de Belgique. Année 1909. (Current numbers.) 8vo. 1909	The Administration of Mines
Brussels. Rapport annuel. Démographie. Statistique médicale. Salubrité publique. Hygiène. Année 1907. 8vo. 1908	The Health Department of Brussels
Académie royale de Belgique. Bulletin de la classe des lettres. (Current numbers.) 8vo. 1909	The Academy

Brazil—

Brazilian Review. (Current numbers.) Fol. 1909	The Editor

Bulgaria—

Bulletin mensuel de la Direction générale de statistique du royaume de Bulgarie. Année 1. Nos. 1 and 2. October and November, 1908. 4to. 1908	The Statistical Bureau
Trade. Mouvement commercial de la Bulgarie avec les pays étrangers. 3ᵉ trimestre de 1908. 4to. 1908	

Chile—

Sinopsis estadística i jeográfica de la Republica de Chile en 1906. 8vo. 1908	The Statistical Bureau

China—

Customs Gazette. (Current numbers.) 4to. 1909	The Inspectorate-General of Customs, Shanghai
List of lighthouses, light-vessels, buoys, &c., on the coast and rivers of China, 1909. 4to. 1909	

Cuba—

Agriculture. Boletín oficial de la Secretaria de agricultura, industria y comercio. (Current numbers.) 8vo. 1909	National Library, Havannah
Trade. Estadística general. Comercio exterior Primer semestre del año 1907 y año fiscal de 1906-07. 4to. 1908	The "Secretaria de Hacienda"

(a) **Foreign Countries**—*Contd.*

Cuba—*Contd.*

Havannah—

Presupuesto ordinario de Gastos é Ingresos para el ejercicio de 1907 á 1908. Fol. 1908	The National Library
Presupuesto extraordinario de Gastos é Ingresos para el ejercicio de 1907-1908. 4to. 1909	

Denmark—

Annuaire Statistique. 13me année 1908. 8vo. 1908	The State Statistical Bureau
Communications Statistiques. 4me série. Tome 28. 8vo. 1908	
Copenhagen. Statistiske Oplysninger, vii, om Kobenhavn og Frederiksberg, 1903-1907. 8vo. 1908	The Municipal Statistical Bureau

Egypt—

Births and Deaths in the principal towns of Egypt during third quarter 1907-1908 classified according to age and diseases. Obl. 4to. 1908	The Department of Public Health
Education. Statistical return of pupils attending public and private schools in Egypt for the year 1907-08. 4to. 1909	The Statistical Department, Ministry of Finance
Finance. Compte rendu des travaux de la Commission de la Dette Publique, 1908. 33e année. 8vo. 1909	The "Caisse de la Dette Publique"
Navigation in Ports of Egypt and the Suez Canal. Quarterly Returns. (Current numbers.) 8vo. 1908	The Statistical Department, Ministry of Finance
Postal. Egyptian Postal Guide. Published yearly. No. 32, 1909. 8vo. 1909	The Postal Administration
Comité de conservation des monuments de l'art arabe. Exercice 1907. Fasc. 24. 8vo. 1908	The Committee

France—

Agriculture. Ministère de l'Agriculture. Bulletin mensuel de l'Office de renseignements agricoles. (Current numbers.) 8vo. 1909	The Ministry of Agriculture
Finance. Ministère des Finances. Bulletin de Statistique et de Législation comparée. (Current numbers.) 8vo. 1909	The Ministry of Finance
Inland Navigation. Statistique de la Navigation intérieure. Relevé général du tonnage des marchandises. Année 1907. 4to. 1908	The Ministry of Public Works
Labour. Statistique des grèves et des recours à la conciliation et à l'arbitrage survenus pendant l'année 1907. 8vo. 1908 [There were 1,275 strikes in 1907 affecting 198,000 workers, of whom 165,000 were males. The strikes caused a loss of over three and a half million working days to the strikers, and to some 30,000 other workers, whose employment ceased as a consequence of the strikes.]	The French Labour Department
Mining. Statistique de l'industrie minérale et des appareils à vapeur en France et en Algérie pour l'année 1907. 4to. 1908	The Ministry of Public Works
Mint. Administration des monnaies et medailles. Rapport au Ministre des Finances. 13e année, 1908. 8vo. 1908	The French Mint
Poor relief. Statistique annuelle des Institutions d'assistance. Année 1906. 8vo. 1908	The French Labour Department
Prisons. Statistique pénitentiaire pour l'année 1906. La. 8vo. 1908	The French Government
Railways. Chemins de fer de l'Europe. Situation au 1er Janvier 1908. 8 pp., 4to. 1909	The Ministry of Public Works

(a) **Foreign Countries**—*Contd.*

France—*Contd.*

Trade. Commerce de la France. Documents statistiques [mensuels]. (Current numbers.) 8vo. 1909	The Director-General of Customs
—— Tableau général du Commerce et de la Navigation. Année 1907. Vol. 2, Navigation. La. 4to. 1908	
Banque de France. Assemblée générale des Actionnaires, 28 Janvier 1909. Compte rendu au nom du Conseil général de la Banque et Rapport de M.M. les Censeurs. 4to. 1909	The Bank
—— Les Institutions patronales et mutuelles à la Banque de France. Decembre 1908. 4to. 1909	
Colonies. Madagascar et Dépendances. Statistiques générales. Situation de la Colonie au 31 Décembre 1906. Population. Administration. Justice. Enseignement. Agriculture. Industrie. Commerce et Navigation. 4to. 1908	The French Colonial Office

Paris—

Annuaire Statistique de la Ville de Paris. 27^{e} Année 1906, et principaux renseignements pour 1907. 8vo. 1908	The Municipal Statistical Bureau
British Chamber of Commerce, Paris. Monthly Circular (current numbers). 4to. 1909	The Chamber

Les documents du progrès, revue internationale. Edition française. 2^{me} Année. September 1908. 8vo. 1908	M. Felix Alcan
Société de Statistique de Paris. Annuaire de 1909. 12mo. 1909	The Society

Germany—

Vierteljahrshefte zur Statistik des Deutschen Reichs. (Current numbers.) 4to. 1909	The Imperial Statistical Bureau
Health. Veröffentlichungen des Kaiserlichen Gesundheitsamtes. (Current numbers.) 8vo. 1909	The Imperial Health Bureau
Insurance. Amtliche Nachrichten des Reichs- Versicherungsamts. 25 Jahrgang. No. 1. 15 Januar, 1909. 4to. 1909 [Contains the statistics of Accident and Sickness Insurance for 1907.]	The Imperial Insurance Bureau
—— Die Krankenversicherung im Jahre 1907. 4to. 1908	The Imperial Statistical Bureau
Justice. Kriminalstatistik für das Jahr 1906. 4to. 1908	
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Statistical abstract for Foreign Countries in each year from 1896 to 1905-06 . . . 34th Number. [Cd-4265.] 8vo. 1908	
Board of Trade Journal. (Current numbers). 1908	
Building Societies. 13th Annual Report by the Chief Registrar of Friendly Societies for 1907. Part 2. Abstract of Accounts. (211–i) 1908	The Chief Registrar
Coal Tables, 1907. (377) 1908	The Board of Trade
Cost of Living in French Towns. Report of an enquiry by the Board of Trade into Working Class Rents, Housing and Retail Prices, with Rates of Wages in certain occupations in the principal industrial towns of France. [Cd-4512] 1909	
Colonies. Statistical Tables relating to British Colonies, Possessions, and Protectorates. Part 31, 1906. [Cd-4385.] 1908	

(c) United Kingdom and its Divisions—*Contd.*

United Kingdom—*Contd.*

Colonial Import Duties. 1908. Return. [Cd–4383.] 8vo. 1908	The Board of Trade
Foreign Import Duties, 1908. Statement of rates of import duties levied in European countries, Egypt, the United States, Mexico, Argentina, Japan, China, and Persia upon Produce and Manufactures of the United Kingdom. [Cd–4414.] 8vo. 1908	
Mines and quarries: general report and statistics for 1908. Advance proof of tables of fatal accidents and deaths in and about mines and quarries during 1908. Fol. 1909	The Home Office
Summary of Statistics of Railways in the United Kingdom for the years 1897, 1903, 1904, 1905, 1906, and 1907. Compiled from the Returns of the Board of Trade. 1 sheet. November, 1908	Mr. W. Bygate
War Office. Accessions to the War Office Library. (Current monthly numbers.) 8vo. 1909	The War Office
Agriculture. Report of Departmental Committee on the working in Great Britain of the Fertilisers and Feeding Stuffs Acts, 1893, with minutes of evidence, appendices and index. [Cd–2372] and [Cd–2386.] 1905	Purchased
Army. Technical instruction for soldiers. [Cd–4059.] 1908	
Building Accidents Committee. Report of Departmental Committee . . . with draft regulations, minutes of evidence and appendices. [Cd–3848.] 1907	
Coast erosion and afforestation. 2nd Report (on afforestation) of the Royal Commission. Vol. ii (Part 1). [Cd–4460.] 1909	
Congo State. Correspondence respecting Taxation of Natives, &c. [Cd–4466.] 1909	
Crown lands act, 1906. 2nd Report. [Cd–4373.] 1908	
Fair wages Committee. Report with appendices. [Cd–4422.] 1908. Minutes of Evidence with index thereto. [Cd–4423.] 1908	
Finance. Public Accounts Committee. Copy of Handbook to Reports of the Committees of Public Accounts. Vol. 4. (1901-07) with Index comprehending the 4 vols. (1857-1907). (382.) 8vo. 1908	
India. (Customs revenue.) (348.) 1908	
Inebriates' Acts. Report of Departmental Committee, with Minutes of Evidence, Appendices, and Indexes. [Cd–4438 and 4439.] 1908	
Land. Royal Commission on Land Transfer Acts. First Report and Appendix to First Report of the Commissioners. Minutes of Evidence with Appendices. [Cd–4509 and 4510.] 1909	
Navy and Army. List of Inquiries into Naval and Military affairs since 1800. (297.) 1908	
Poor. Report of Royal Commission on the Poor Laws and relief of distress. [Cd–4499.] 1909	
Publications. Report of Select Committee on Publications. (358.) 1908	
Public Trustee. 1st General Annual Report. [Cd–4501.] 8vo. 1909	

(c) United Kingdom and its Divisions—*Contd.*

United Kingdom—*Contd.*

Registration of Firms abroad. Reports as to laws and regulations in force. [Cd-4420.] 1908	Purchased
Truck Acts. Report of Departmental Committee. Vol. 1, Report and Appendices. [Cd-4442.] 1908	
Trusts Bill. Reports from Select Committee with Proceedings and an Appendix. (355.) 1908	
Tariffs. Proposed new French Tariff. [Cd-4489.] 1909	
Trustee Savings Banks. 17th Annual Report for 1907-08. (21.) 1909	
Tuberculosis. Royal Commission on Tuberculosis (Human and Bovine). 3rd Interim Report and Appendix. [Cd-4483.] 1909	
Unemployed Workmen Act, 1905. Regulations. (330.) 1908	
Ventilation of Factories and Workshops. 2nd Report of Departmental Committee. Part I Report. [Cd-3552.] 1907	
Women electors, County and Borough Councils. (364.) 1908	
Tariff Commission. Report. Vol. 4. The engineering industries including structural, electrical, marine and shipbuilding, mechanical and general industrial engineering. With analysis and summary of evidence and statistical tables. 4to. 1909	The Commission

Great Britain—

Board of Agriculture and Fisheries—

Agricultural Statistics, 1907. Vol. 42. Part 4. Colonial and Foreign Statistics with Index to Vol. 42. [Cd-4445.] 8vo. 1908	Board of Agriculture and Fisheries
Agricultural Statistics, 1908. Vol. 43. Part 1. Acreage and live stock returns. Part 2, Returns of produce of crops. 2 Parts. 8vo. 1909	
Journal of the Board. (Current numbers.) 8vo. 1909	
Supplement to Journal of Board of Agriculture. December, 1908. The Food of some British Birds. 8vo. 1908	
Leaflets. (Current numbers.) 8vo. 1909	
Weekly Returns of Market Prices (of Cattle, Dead Meat, Provisions, Fruit, and Vegetables, Hay and Straw). (Current numbers.) Fol. 1909	
Annual Report of Proceedings under Salmon and Freshwater Fisheries Acts, &c., for 1907. [Cd-4393.] 8vo. 1908	Purchased

England and Wales—

Births, &c. 70th Annual Report of Registrar-General of Births, Deaths, and Marriages in England and Wales. (1907). [Cd-4464.] 8vo. 1908	The Registrar-General of England
Ecclesiastical Commissioners for England. 44th, 54th, and 55th Annual Reports with Appendices. 3 vols. 8vo. 1892, 1902-03	The Commissioners
Education. Special reports on educational subjects. Vol. 22. Provision made for Children under compulsory school age in Belgium, France, Germany and Switzerland. [Cd-4477.] 8vo. 1909	Purchased
—— Statistics of public education in England and Wales, 1906-7-8. Part 2, Financial Statistics. [Cd-4506.] 8vo. 1909	

(c) United Kingdom and its Divisions—*Contd.*

England and Wales—*Contd.*

Judicial Statistics, England and Wales, 1907. Part 1, Criminal Statistics. [Cd–4514.] Part 2, Civil Judicial Statistics. [Cd–4424.] 4to. 1908-09	The Home Office
Local Government Board. 37th Annual Report of the Board, 1907-08. [Cd–4347.] 8vo. 1908	The Local Government Board
Local Taxation Returns (England and Wales). Year 1905-06. Part 5, Accounts of Councils of Boroughs. (276.) 1908. Part 8, Summary and Index. (276–iii.) 1909	
Local Taxation Returns (England and Wales). Year 1906-07. Parts 1 and 2. (333 and 333–i.) 1908-09	
Poor relief (England and Wales). Statement for half-year ended Lady-day, 1908. (340.) 1908	
Poor law relief. (Paupers relieved in a year, and periods of relief). (250.) 1908	Mr. G. U. Yule
Pauperism (England and Wales) (Monthly Statements). (Current numbers.) 1909	
London County Council—	
Statistical Abstract for London, 1908. Vol. xi. 8vo. 1909	The London County Council
Annual Report of Proceedings of Council for year ended 31st March, 1908. Fol. 1908	
Education. Report on home circumstances of "necessitous" children in twelve selected schools. (No. 1,203.) Fol. 1908	Purchased
Education grants. Memorandum and tables prepared for the Conference of Local Education Authorities on education grants, 11th December, 1908. Fol. 1909	The London County Council
Housing of the working classes. 15 pp., fol. 1908	Purchased
Public Health. Report of the Public Health Committee submitting Report of Medical Officer of Health of the County for 1907. Fol. 1908 (Another copy presented by the Medical Officer.)	The London County Council
London County Council Gazette. (Current numbers.) Fol. 1909	
Metropolitan Water Board. Abstract of Accounts, year ended 31st March, 1908. 8vo. 1909	The Accountant
Battersea. Annual Report of Council for year ended 31st March, 1908, with appendices. 8vo. 1908	The Town Clerk
Wandsworth. Report of Council of Metropolitan Borough of Wandsworth for year 1907-8, to which is appended the Annual Report of Medical Officer of Health for 1907. 8vo. 1908	"
London Underground Railways. Metropolitan Electric Railways (Underground). Framed Map of London. 1908	Messrs. Johnson, Riddle and Co., Ltd.

Ireland—

Department of Agriculture and Technical Instruction. Journal. (Current numbers.) 8vo. 1909	The Department of Agriculture
Banking, Railway, and Shipping Statistics, Ireland. (June, 1908.) [Cd–4060.] 8vo. 1908	
Land Purchase Acts. Diagram in reference to the areas of land dealt with under the Acts. [Cd–4432.] 1908	Purchased
Poor law relief (Ireland). (306.) 1908	

(c) United Kingdom and its Divisions—*Contd.*

Ireland—*Contd.*

Public Works, Ireland. 76th Annual Report of Commissioners for year ending 31st March, 1908. [Cd-4228.] 1908	Purchased
Trade. Report on Trade in Imports and Exports at Irish ports during 1907. [Cd-4429.] 8vo. 1908	

Scotland—

Judicial Statistics of Scotland for 1907. [Cd-4395.] 4to. 1908	Purchased
Local Taxation Returns (Scotland) for year 1906-07. (302.) 1908	
Unemployed Workmen Act, 1905. Report as to proceedings of Distress Committees in Scotland for 1907-08. [Cd-4478.] 1908	
Edinburgh. Accounts published in the year 1908. Fol. 1909	The City Chamberlain
United Free Church of Scotland. Eighth Report on Foreign Missions (for 1907). 8vo. 1908	Dr. George Smith, C.I.E.

(d) Authors, &c.

Acworth (*W. M.*). The Railways of England. 4th edit. 8vo. 1890	Purchased
Andréadès (*A.*). History of the Bank of England. Translated [from French] by Christabel Meredith, with preface by H. S. Foxwell. Two volumes in one. 1640-1903. 8vo. 1909	Messrs. P. S. King and Son
Barrington (*Amy*) and *Pearson* (*Karl*), F.R.S. A first study of the inheritance of vision and of the relative influence of heredity and environment on sight. (Francis Galton Laboratory for National Eugenics. English Laboratory Memoirs, V.) 61 pp., 4to. 1909	The Author
Beveridge (*W. H.*). Unemployment: a problem of industry. 8vo. 1909	Messrs. Longmans
Bosanquet (*Helen*). The Poor Law Report of 1909. A Summary explaining the defects of the present system and the principal recommendations of the Commission, so far as relates to England and Wales. 8vo. 1909	Messrs. Macmillan and Co.
Bowles (*Thomas Gibson*). National Finance in 1908 and after; being a review of the past, a forecast of the future, an appeal for true accounts, a plea for retrenchment, a protest against debt and a warning against false taxation. 52 pp., 8vo. 1908	Purchased
Bright (*Charles*)—	
Imperial telegraphic communication and the "all British" Pacific cable. 32 pp. 8vo. 1902	The Author
Submarine Telegraphy. 31 pp., 8vo. 1907	
Burbury (*S. H.*). On the law of probability for a system of correlated variables. (Reprinted from the Philosophical Magazine, January 1909.) 28 pp., 8vo. 1909	,,
Collie (*R. J.*), M.D., J.P. Medical evidence and the laws relating to compensation for injury. 38 pp., 8vo. 1909	
Contento (*Aldo*). Teoria statistica generale e demografica. (Piccola biblioteca scientifica. 16.) 12mo. 1909	The Società Editrice Libraria
Cornélissen (*Christian*). Théorie du salaire et du travail salarié. 8vo. 1908	Purchased

(d) **Authors, &c.**—*Contd.*

Darbishire (*A. D.*). Some tables for illustrating statistical correlation. 21 pp., diagrams. 8vo. 1907	The Author
Davidson (*John*) and *Gray* (*Alexander*). The Scottish staple at Veere. A study in the economic history of Scotland. 8vo. 1909 [On trading relations between Scotland and the Low Countries.]	Messrs. Longmans
Dawson (*William Harbutt*). The evolution of modern Germany. 8vo. 1908	Purchased
Dearle (*Norman B.*). Problems of unemployment in the London building trades. 8vo. 1908	
Dupont (*Paul*). L'assurance contre le chômage. 8vo. 1908	
Eberstadt (*Prof. Dr. Rud*). Handbuch des Wohnungswesens und der Wohnungsfrage. 8vo. 1909	
Emminghaus (*A.*). Poor relief in different parts of Europe. A selection of Essays. Edited by A. Emminghaus. 8vo. 1873	
Engelbrecht (*Th. H.*). Die geographische Verteilung der Getreidepreise in Indien von 1861 bis 1905. viii + 112 pp., diagrams, &c., 8vo. 1908	The Author
Ferraris (*Carlo F.*). Gli inscritti nelle università e negli istituti superiori italiani, 1893-94—1907-08. 24 pp., 8vo. 1909	,,
Fisher (*Irving*). Gold depreciation and interest rates. 4 pp., 8vo. 1909	,,
Foot (*Alfred*). The practice of Insurance against Accidents and Employers' Liability. 2nd edit. 8vo. 1908	,,
Gaedeken (*Paul*). Contribution statistique à la réaction de l'organisme sous l'influence physico-chimique des agents météorologiques. 41 pp., 8vo. 1909	,,
Gibson (*A. H.*). Bank rate. The Banker's Vade Mecum. (2nd year of publication.) 1st January, 1909. 8vo. 1909	The Compiler
Haffner (*Dr. A.*). Das Notenbankwesen in der Schweiz, England und Deutschland. 8vo. 1908	Mr. W. Kohlhammer
Halle (*E. von*). Die Weltwirtschaft. Ein Jahr- und Lesebuch. Jahrgang 3: 1908. Teil 1, Internationale Übersichten. 4to. 1908	Purchased
Hasenkamp (*Adolf*). Die wirtschaftliche Krisis des Jahres 1907 in den Vereinigten Staaten von Amerika. 8vo. 1908	
Henry (*Charles*). Psycho-Biologie et Energétique. Essai sur un principe de méthodes intuitives de calcul. 8vo. 1909	The Author
Hirschberg (*Dr. J.*). Die mathematischen Grundlagen der medizinischen Statistik elementar dargestellt. xii + 96 pp., 8vo. 1874	Mr. G. Udny Yule
Honsig (*Heinrich*). Die Pensionsversicherung. Mathematische und tabellarische Entwicklung der Invaliden-, Witwen-, u. Waisenpensionen . . . 4to. 1909	Purchased
Hooper (*E. Grant*). The German state insurance system for providing invalid and old age pensions. 29 pp., 8vo. 1908	The Author
Horrocks (*Joseph*). Railway rates. The method of calculating equitable rates and charges for merchandise carried on railways in three parts. 8vo. 1909	Messrs. Swan Sonnenschein and Co.
Hutchins (*B. L.*). The public health agitation, 1833-48. 8vo. 1909	Purchased

(d) **Authors, &c.**—*Contd.*

Ingenbleek (*J.*). Impôts directs et indirects sur le revenu. La contribution personnelle en Belgique. L'Einkommensteuer en Prusse. L'income-tax en Angleterre. 8vo. 1908	The Institute of Sociology, Brussels
Jackson (*J.*). Average Bank rate for the different months in the year, taking averages for 20 years periods, with chart. Cardboard sheet. 1909	The Compiler
Johnston (*R. M.*). State borrowing and sinking funds for the redemption of State debts, regarded from an economical point of view. 21 pp., 8vo. 1908	The Author
Knibbs (*G. H.*). On the influence of infantile mortality on birthrate. (Reprinted from the Journal of the Royal Society of N. S. Wales.) 14 pp., 8vo. 1908	„
Lansburgh (*Alfred*). Das deutsche Bankwesen mit einer vergleichenden Statistik der Bilanzen aller deutschen Aktienbanken in den Jahren 1857-72—1907-08. 8vo. 1909	Purchased
Laughlin (*J. Laurence*). Industrial America. Berlin Lectures of 1906. 8vo. 1907	
Leroy-Beaulieu (*Paul*). Le collectivisme. Examen critique du nouveau socialisme. L'évolution du socialisme depuis 1895. Le syndicalisme. 5^e edit. 8vo. 1909	
Lifschitz (*Dr. F.*). Zur Kritik der Boehm-Bawerkschen Wert-Theorie. 116 pp., 8vo. 1908	Mr. Wilhelm Engelmann
Loria (*Achille*). La sintesi economica. Studio sulle leggi del reddito. 8vo. 1909	Messrs. Fratelli Bocca, Turin
Michel (*Edmond*). Études statistiques, économiques, sociales, financières et agricoles. La propriété. Evaluation de la fortune privée. Enquête sur la propriété non bâtie et bâtie. Enquête agricole. Préface de M. Alfred de Foville. Cartograms and diagrams, la. 8vo. 1908	Purchased
Mourlon (*M.*)—	
La documentation géologique. 9 pp., 8vo. 1908	The Author
The Geological Survey of Belgium . . . 11 pp., 8vo. 1904	
Newsholme (*Arthur*). The Prevention of Tuberculosis. With 39 diagrams, 8vo. 1908	Purchased
Pearson (*Karl*), *F.R.S.* The scope and importance to the State of the science of national eugenics. 2nd edit. 45 pp., 8vo. 1909	The Author
Phelps (*Edward Bunnell*). A statistical study of infant mortality. (Reprinted from the Quarterly publications of the American Statistical Association, September, 1908). 40 pp., 8vo. 1908	—
Pugliese (*Salvatore*). Due secoli di vita agricola. Produzione e valore dei terreni, contratti agrari, salari e prezzi nel Vercellese nei secoli 18 e 19. La. 8vo. 1908	The Author
Rozenraad (*C.*)—	
Table comparing Gold and Silver Stock, &c., of principal European banks of issue at end of 1908 and of 1907. Sheet. 1909	The Compiler
Table comparing Imports and Exports of certain countries during 1908 and 1907. Sheet. 1909	
Saint-Léon (*Étienne Martin*). Histoire des corporations de métiers depuis leurs origines jusqu'à leur suppression en 1791, suivie d'une étude sur l'évolution de l'idée corporative de 1791 à nos jours et sur le mouvement syndical contemporain. 2^e edit. 8vo. 1909	Purchased

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Schumpeter (*Dr. Joseph*). Das Wesen und der Hauptinhalt der theoretischen Nationalökonomie. 8vo. 1908	
Schuurman (*W. Elink*). Plaatselijk werkende brandverzekering. 10 pp., 8vo. 1908	The Author
Seligman (*Edwin R. A.*). L'impôt progressif en théorie et en pratique. Traduction française par Ant. Marcaggi. 8vo. 1909	Messrs. Giard and Brière
Seyd (*Richard*). Statistics of failures in the United Kingdom during the year 1908. Sheet fol. 1908	Mr. Richard Seyd
Siebenhaar (*W.*). The Use and Scope of Statistics. (With three diagrams.) 12 pp., 8vo. 1908	The Author
Sonndarfer (*Dr. Rudolf*). Die Technik des Welthandels. Ein Handbuch der internationalen Handelskunde. 2te Auflage. 8vo. 1900	Purchased
Spicer (*Ernest Eran*). An Outline of the Money Market. 56 pp. (bound in roan), 8vo. 1908	Messrs. Gee and Co.
St. Clair (*Oswald*). Low wages and no wages. An essay on the economic causes of poverty, unemployment, and bad trade. 8vo. 1908	Purchased
Streeter (*T. E.*). The Elements of the Theory of Probabilities. 31 pp., 8vo. 1908	The Author
Sykes (*Ernest*). Banking and currency. With introduction by F. E. Steele. 2nd Edition. 8vo. 1908	Purchased
Tattersall (*William*). Cotton Trade Circular for 1908. No. 127. 4to. 1909	The Compiler
Temple (*Sir Richard*). Progress of India, Japan, and China in the Century. 8vo. 1902	Purchased
Unwin (*George*). The Gilds and Companies of London. 8vo. 1908	
Wallis Index. Statements showing probable prices of Cotton, &c., for January, February and March, 1909, calculated by the Wallis Index Number. 3 parts, 4to. 1909	The Compiler
Welsford (*J. W.*). The strength of nations. An argument from history. New impression. 8vo. 1907. (2 copies)	Mr. G. A. H. Samuels
Wilson (*Prof. E. B.*). Economics. Reviews of two books by Irving Fisher. 18 pp., 8vo. 1909	The Author
Withers (*Hartley*). The Meaning of Money. 8vo. 1909	Messrs. Smith, Elder, and Co.
Wolfe (*S. H.*). Modified premiums and costs. American experience 3½ per cent. Tables of net annual premiums and costs of insurance, modified preliminary term method. 24 pp., 8vo. 1908	The Author
Zuckerkandl (*Dr. Robert*). Zur Theorie des Preises mit besonderer Berücksichtigung der geschichtlichen Entwicklung der Lehre. 8vo. 1889	Purchased

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(e) **Societies, &c. (British).**

Agricultural and Horticultural Association, Ltd. 41st Annual Report of the Association's operations for year 1907-08. 16 pp., 8vo. 1908	The Association
Bradford Chamber of Commerce. Statistics relating to the worsted and woollen trades of the United Kingdom, including the year 1908. 80 pp., 8vo. 1909	Bradford Chamber of Commerce

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British Iron Trade Association—	
Statistics of make of pig-iron and Bessemer steel in Great Britain for first half of 1908. Advance copy. 8 pp., 8vo. 1908	The Association
Report of proceedings at annual meeting held 13th May, 1908. 19 pp., 8vo. 1908	
Corporation of Foreign Bondholders. 35th Annual Report of Council for the year 1908. 8vo., 1909	The Council
Great Northern Railway Co. Report of Directors and Statement of Accounts for half-year ended 31st Dec., 1908. Fol. 1909	The Company
Howard Association. Crime of the Empire and its treatment. The Report of the Howard Association, 1908. 8vo. 1908	The Association
Institution of Civil Engineers. Minutes of Proceedings. Vol. 174. 8vo. 1908	The Institution
Iron and Steel Institute Journal. Vol. 78. No. 3, 1908. 8vo. 1908	The Institute
Jews. 39th Annual report and accounts of the United and Constituent Synagogues for 1908, and estimates for 1909. Fol. 1909	Council of the United Synagogue
Lloyd's Register of British and Foreign Shipping. Annual Summary of Shipbuilding at home and abroad for 1908, and Statistical Tables for 1908. Fol. 1909	The Society
Peabody Donation Fund. 44th Annual Report of the Governors of the Fund for 1908. 4 pp., 4to. 1909	The Secretary
Royal Asiatic Society. Journal. January, 1909. 8vo. 1909	The Society
Royal College of Physicians. Catalogue of accessions to the Library during the year ending July, 1908, with list of periodicals. 8vo. 1908	The College
Royal Philosophical Society, Glasgow. Proceedings, vol. 39, 1907-08. With appendix: Early Burgh organisation in Scotland, as illustrated in the history of Glasgow: by *David Murray*. 8vo. 1908	The Society
Royal Society. Reports to the Evolution Committee. Report 4. 8vo. 1908	"
Royal Society of Edinburgh. Proceedings. Session 1908-09. Vol. 29. Part 2. 8vo. 1909	"
Royal Westminster Ophthalmic Hospital. Report for 1908. 8vo. 1909	The Hospital
Statistical and Social Inquiry Society of Ireland Journal. December, 1908. 8vo. 1908	The Society

(f) **Periodicals, &c., and Miscellaneous (British).**

Associated Accountants' Journal. Vol. 1. No. 3, September, 1908, and No. 4, January, 1909. 8vo. 1908-09	Central Association of Accountants
Odd Fellows' Magazine. No. 410, February, 1909 (contains reprint of Sir Edward Brabrook's Paper on Social Insurances). 8vo. 1909	The Editor
Women's Industrial News. December, 1908. 8vo. 1908	Purchased
Newspaper Press Directory for 1909. 64th annual issue. La. 8vo. 1909	Messrs. C. Mitchell and Co.
Banking Almanac and Directory for 1909	Purchased
Bourne's Insurance Directory, 1909. New Series. With Supplement. 8vo. 1909	
British Almanac, 1909	
Financial Reform Almanac, 1909	

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Howe's Classified Directory to Metropolitan Charities for 1909	Purchased
Imperial Tariff, 1909	
Municipal Year-book of the United Kingdom for 1909. 8vo. 1909	
Official Year-book of Church of England, 1909. 8vo. 1909	
Shipping World Year-book, 1909	
Willing's Press Guide, 1909	
Ellison (Messrs.). Annual Review of the Cotton Trade for the year 1908. 8 pp., 4to. 1908	The Firm
Figgis and Co. (Messrs. S.). Annual Review of India Rubber Market, 1908. 4 pp. 1st January, 1909	"
Gow, Wilson and Stanton (Messrs., Ltd.). India, Ceylon and Java Tea report for 1908. Sheet. 31st December, 1908	"
Helmuth Schwartze and Co. (Messrs.). Annual Report on Wool for 1908. 4 pp., fol. 1909	"
Macmillan and Co. (Messrs.). Complete catalogue of books published by the firm. January, 1909. 8vo. 1909	"
Muller and Co. (Messrs. W. O.). Annual report of the Leaf-Tobacco Market with report on Statistics, &c., and Tables. 16 pp., la fol. 1st January, 1909	"
Pixley and Abell (Messrs.). Annual Circular relating to Imports and Exports and prices of Bullion for 1908. Sheets. 1909	"
Weddel and Co. (Messrs. W.). Annual Review of the Frozen Meat Trade for 1908, with diagrams. Sheets. 1909	"

The weekly, monthly, or quarterly issues of the following returns have also been received during the past quarter:—

Consular Reports—From United States and United Kingdom.

Labour Reports, &c.—From Austria-Hungary, Belgium, France, Germany, United States, Massachusetts and New York States, Canada, New Zealand, and United Kingdom.

Trade Returns—From Argentina, Austria-Hungary, Belgium, Bulgaria, China, Egypt, France, Germany, Greece, Italy, Mexico, Netherlands, Roumania, Russia, Spain, Sweden, Switzerland, United States, India, Australia, and United Kingdom.

Vital Statistics—From Argentina, Egypt, Germany, Italy, Netherlands Roumania, Switzerland, United States (California, Connecticut, and Michigan only), Queensland, South, Australia, and United Kingdom.

Vital Statistics of following Towns—Buenos Ayres, Buda-Pesth, Brünn, Prague, Brussels, Copenhagen, Berlin, Bucharest, Moscow, Madrid, Stockholm, London, Manchester, Dublin, Edinburgh, and Aberdeen.

The weekly, monthly, or quarterly issues of the following periodicals, &c., have also been received during the past quarter. They are arranged under the names of the countries in which they are published:—

Denmark—Nationalökonomisk Tidsskrift.

France—Annales des Sciences Politiques. Économiste Français. Journal des Économistes. Monde Économique. Polybiblion, Parties Littéraire et Technique. Réforme Sociale. Le Rentier. Revue d'Économie Politique. Revue de Statistique. Journal de la Société de Statistique de Paris.

Germany—Allgemeines Statistisches Archiv. Archiv für Rassen- und Gesellschafts-Biologie. Archiv für Sozialwissenschaft und Sozialpolitik. Jahrbuch für Gesetzgebung, Verwaltung, und Volkswirtschaft. Jahrbücher für Nationalökonomie und Statistik. Kritische Blätter für die gesamten Socialwissenschaften. Zeitschrift für die gesamte Staatswissenschaft. Zeitschrift für die gesamte Versicherungs-Wissenschaft. Zeitschrift für Socialwissenschaft. Mittheilungen aus der Handelskammer Frankfurt a. M.

Italy—L'Economista. Giornale degli Economisti. Rivista Italiana di Sociologia. Riforma Sociale. Società Umanitaria, Bollettino mensile.

Sweden—Ekonomisk Tidskrift.

Switzerland—Journal de Statistique suisse.

United States—Bankers' Magazine. Bradstreet's. Commercial and Financial Chronicle, with supplements. Duns' Review. Journal of Political Economy. Political Science Quarterly. Quarterly Journal of Economics. Yale Review. American Academy of Political and Social Science, Annals. American Economic Association, Publications. American Geographical Society, Bulletin. American Statistical Association, Quarterly Publications. American Philosophical Society, Proceedings and Transactions. Columbia University, Studies in History, &c.

Canada—British Columbia Mining Record. Canadian Life and Resources.

India—Indian Engineering.

New Zealand—Government Insurance Recorder. Trade Review and Price Current.

United Kingdom—The Accountant. Accountants' Magazine. Agricultural Economist. Athenæum. Australian Trading World. Bankers' Magazine. Broomhalls' Corn Trade News. Browne's Export List. Colliery Guardian. Commercial World. Economic Journal. Economic Review. Economist. Farm and Garden. Financial Review of Reviews. Fireman. Illuminating Engineer. Incorporated Accountants' Journal. Insurance Record. Investors' Monthly Manual. Investors' Review. Joint Stock Companies' Journal. Labour Co-partnership. Licensing World. Machinery Market. Nature. Navy League, Journal. Policy-Holder. Post Magazine. Public Health. Publishers' Circular. Sanitary Record. Shipping World. Statist. The Times. Anthropological Institute, Journal. Cobden Club, Leaflets. East India Association, Journal. Howard Association, Leaflets, &c. Institute of Actuaries, Journal. Institute of Bankers, Journal. Institution of Civil Engineers, Minutes of Proceedings. Iron and Steel Institute, Journal. Lloyd's Register of British and Foreign Shipping, Statistical Tables. London Chamber of Commerce, Journal. London University Gazette. Manchester Literary and Philosophical Society, Memoirs and Proceedings. Royal Agricultural Society, Journal. Royal Colonial Institute, Proceedings and Journal. Royal Geographical Society, Geographical Journal. Royal Irish Academy, Proceedings and Transactions. Royal Meteorological Society, Meteorological Record and Quarterly Journal. Royal Society, Proceedings. Royal United Service Institution, Journal. Sanitary Institute, Journal. Society of Arts, Journal. Statistical and Social Inquiry Society of Ireland, Journal. Surveyors' Institution, Professional Notes and Transactions. Trade Circulars.

PERIODICAL RETURNS.

REGISTRATION OF THE UNITED KINGDOM.

No. I.—ENGLAND AND WALES.

MARRIAGES—To 30th September, 1908.

BIRTHS and DEATHS—To 31st December, 1908.

A.—*Serial Table of* Marriages, Births, *and* Deaths, *returned in the Years* 1908-1902, *and in the* Quarters *of those Years.*

Calendar Years, 1908-1902:—*Numbers.*

Years.........	1908.	'07.	'06.	'05.	'04.	'03.	'02.
Marriages No.	—	276,421	270,038	260,742	257,856	261,103	261,750
Births........ ,,	942,611	918,042	935,081	929,293	945,389	948,271	940,509
Deaths .... ,,	521,643	524,221	531,281	520,031	549,784	514,628	535,538

Quarters *of each Calendar Year,* 1908-1902.

(I.) Marriages:—*Numbers.*

Qrs. ended last day of	1908.	'07.	'06.	'05.	'04.	'03.	'02.
March........ No.	47,511	53,017	45,478	45,173	44,968	45,584	54,056
June .... ,,	73,393	69,782	74,420	70,954	71,518	73,096	62,463
September ,,	73,762	79,129	75,949	72,811	71,271	71,958	71,511
December ,,	—	74,493	74,191	71,804	70,099	70,465	73,720

(II.) Births:—*Numbers.*

Qrs. ended last day of	1908.	'07.	'06.	'05.	'04.	'03.	'02.
March........ No.	240,411	229,287	237,427	237,826	240,513	234,959	231,169
June .... ,,	243,885	238,535	237,168	236,702	238,634	241,511	237,522
September ,,	236,877	230,528	234,663	235,352	237,666	241,595	241,488
December ,,	221,438	219,692	225,823	219,413	228,576	230,206	230,330

(III.) Deaths:—*Numbers.*

Qrs. ended last day of	1908.	'07.	'06.	'05.	'04.	'03.	'02.
March........ No.	156,359	160,020	140,451	148,291	153,347	138,201	150,554
June .... ,,	121,322	127,337	125,370	123,078	124,245	123,661	132,518
September ,,	113,680	106,813	129,397	120,882	133,694	116,740	115,410
December ,,	130,282	130,051	136,063	127,780	138,498	136,026	137,056

Annual Rates of MARRIAGES, BIRTHS, *and* DEATHS, *per* 1,000 PERSONS LIVING *in the Years* 1908-1902, *and in the* QUARTERS *of those Years.*

Calendar YEARS, 1908-1902:—*General Ratios.*

YEARS	1908.	Mean '98–1907.	1907.	'06.	'05.	'04.	'03	'02.
Estmtd. Popln. of England and Wales *in thousands* in middle of each Year	35,349,	—	34,946,	34,547,	34,153,	33,763,	33,378,	32,998,
Persons Married	—	15·8	15·8	15·6	15·3	15·2	15·6	15·9
Births	26·5	28·1	26·3	27·1	27·2	27·9	28·4	28·5
Deaths	14·7	16·4	15·0	15·4	15·2	16·2	15·4	16·2

QUARTERS *of each Calendar Year,* 1908-1902.

(I.) PERSONS MARRIED:—*Ratio per* 1,000.

Qrs. ended last day of	1908.	Mean '98–1907	1907.	'06.	'05.	'04.	'03.	'02.
March	10·8	11·4	12·3	10·7	10·7	10·7	11·1	13·3
June	16·7	17·1	16·0	17·3	16·7	17·0	17·6	15·2
September	16·6	17·3	18·0	17·4	16·9	16·8	17·1	17·2
December	—	17·3	16·9	17·0	16·7	16·5	16·7	17·7

(II.) BIRTHS:—*Ratio per* 1,000.

Qrs. ended last day of	1908.	Mean '98–1907.	1907.	'06.	'05.	'04.	'03.	'02.
March	27·3	28·6	26·6	27·9	28·2	28·6	28·5	28·4
June	27·7	28·7	27·4	27·5	27·8	28·3	29·0	28·9
September	26·6	28·2	26·2	26·9	27·3	27·9	28·7	29·0
December	24·6	27·0	24·9	25·9	25·5	26·9	27·4	27·7

(III.) DEATHS:—*Ratio per* 1,000.

Qrs. ended last day of	1908.	Mean '98–1907.	1907.	'06.	'05.	'04.	'03.	'02.
March	17·7	18·5	18·6	16·5	17·6	18·2	16·8	18·5
June	13·8	15·6	14·6	14·6	14·5	14·8	14·9	16·1
September	12·8	15·5	12·1	14·9	14·0	15·7	13·9	13·9
December	14·5	16·2	14·8	15·6	14·8	16·3	16·2	16·5

B.—*Special Town Table:*—POPULATION; BIRTH-RATE *and* DEATH-RATE *in each Quarter of* 1908, *in the* SEVENTY-SIX *Large Towns.*

Cities and Boroughs.	Estimated Population in the Middle of the Year 1908.	Annual Rate to 1,000 Living during the Thirteen Weeks ending 28th March, 1908. (1st Quarter.)		27th June, 1908. (2nd Quarter.)		26th Sept., 1908. (3rd Quarter.)		2nd Jan., 1909. (4th Quarter.)	
		Births.	Deaths.	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.
Seventy-six towns	16,234,952	28·3	17·9	27·9	13·7	26·9	13·3	25·0	14·8
Including—									
London*	4,795,757	26·9	17·0	26·2	12·7	25·0	11·9	23·6	13·7
West Ham	315,000	30·5	15·6	30·0	12·2	28·2	13·5	26·8	14·1
Croydon	157,698	27·1	15·8	27·0	12·7	26·1	10·1	21·6	12·5
Brighton	129,967	22·6	19·4	21·6	14·2	21·2	11·6	19·8	13·8
Portsmouth	211,493	29·2	17·8	28·2	12·0	28·4	11·0	28·0	14·2
Plymouth	122,113	23·3	19·4	22·7	14·2	22·0	13·1	20·7	13·4
Bristol	372,785	24·2	17·8	24·8	12·5	22·5	11·3	21·0	12·6
Cardiff	191,446	27·0	15·1	26·9	11·8	26·2	12·2	26·3	12·7
Swansea	97,810	35·2	22·5	34·1	17·3	31·2	16·9	31·9	17·6
Wolverhampton	103,318	28·5	16·3	26·7	13·9	23·3	11·8	24·9	15·2
Birmingham	558,357	31·0	19·8	28·4	14·8	28·0	14·5	26·4	14·6
Norwich	122,841	27·2	17·3	26·0	15·2	24·3	10·8	23·6	13·0
Leicester	240,172	25·3	14·7	24·4	11·2	22·9	10·6	21·0	15·2
Nottingham	260,449	27·2	18·3	28·2	13·7	26·2	12·0	24·9	16·7
Derby	127,583	26·1	15·2	26·8	12·9	25·8	10·5	24·9	13·6
Birkenhead	119,830	32·5	18·1	33·7	15·5	32·5	15·8	27·2	13·7
Liverpool†	753,203	32·1	24·2	33·2	17·3	32·3	17·2	29·5	18·1
Bolton	185,358	26·9	18·2	24·9	14·8	24·0	14·7	22·1	14·3
Manchester	649,251	29·4	21·1	30·7	16·5	30·4	17·3	26·2	18·0
Salford	239,294	32·1	20·7	30·1	16·5	29·9	17·0	26·5	17·1
Oldham	142,507	28·4	23·4	29·6	18·4	27·8	17·7	26·4	19·8
Burnley	105,100	32·1	19·7	26·8	17·2	27·2	17·6	26·9	17·1
Blackburn	135,961	25·3	17·2	26·9	14·0	26·2	14·4	21·9	17·0
Preston	117,799	28·5	20·2	28·2	17·6	29·0	14·5	25·1	19·5
Huddersfield	94,776	24·7	19·1	25·0	15·4	25·3	15·2	22·6	18·4
Halifax†	111,018	21·1	18·3	19·4	12·5	17·9	10·9	17·6	14·7
Bradford	292,136	20·6	16·8	20·7	15·2	20·6	15·2	19·0	15·0
Leeds	477,107	26·0	17·5	26·1	14·0	24·0	14·6	23·1	15·1
Sheffield	463,222	32·8	19·0	31·1	14·0	30·3	13·7	28·8	16·6
Hull	271,137	31·8	17·3	31·0	13·1	30·5	17·0	27·8	17·2
Sunderland	157,693	34·3	22·0	36·6	15·7	31·2	14·9	30·1	18·2
Gateshead	128,393	30·3	17·6	34·4	14·1	30·7	13·5	28·3	14·6
Newcastle-on-Tyne	277,257	31·8	18·3	30·3	14·0	29·4	14·7	27·6	16·9

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* Including deaths of Londoners in the Metropolitan workhouses, hospitals, and lunatic asylums outside the County of London, but excluding deaths of non-Londoners in the London Fever Hospital, the Metropolitan Asylums Hospitals, and the Middlesex County Lunatic Asylum, within the County of London. The deaths in the other towns have been similarly corrected.

† As extended in 1902.

C.—*Divisional Table:*—MARRIAGES *in the Year ending* 30*th September; and* BIRTHS *and* DEATHS *in the Year ending* 31*st December*, **1908**, *as Registered Quarterly.*

1	2	3	4	5	6	7
			MARRIAGES in Quarters ending			
DIVISIONS. (England and Wales.)	AREA in Statute Acres.	Enumerated POPULATION, 1901.	31st December, 1907.	31st March, 1908.	30th June, 1908.	30th September, 1908.
		No.	No.	No.	No.	No.
ENGLD. & WALES.... *Totals*	37,327,479	32,527,843	74,397	47,511	73,393	73,762
I. London	78,817	4,536,429	10,658	6,474	10,239	11,481
II. South-Eastern	3,994,396	3,311,729	7,240	4,237	6,553	7,007
III. South Midland	3,247,169	2,181,174	4,746	2,645	4,574	5,028
IV. Eastern	3,126,517	1,892,299	4,439	2,381	3,607	3,811
V. South-Western	5,023,292	1,913,393	4,004	2,652	3,954	3,647
VI. West Midland	4,051,707	3,679,594	8,578	5,017	8.336	7,951
VII. North Midland........	3,495,711	2,042,406	4,967	2,957	5,178	4,572
VIII. North-Western........	1,911,104	5,212,156	11,193	8,630	12,374	13,054
IX. Yorkshire	3,721,094	3,596,325	8.565	5,500	8,836	7,993
X. Northern	3,536,522	2,129,051	4,813	3,667	5,095	4,730
XI. Monmthsh. & Wales	5,145,150	2,033,287	5,194	3,351	4,647	4,488

8	9	10	11	12	13	14	15	16
	BIRTHS in each Quarter of **1908** ending				DEATHS in each Quarter of **1908** ending			
DIVISIONS. (England and Wales.)	31st March.	30th June.	30th September.	31st December.	31st March.	30th June.	30th September.	31st December.
	No.	No.	No.	No.	No.	No.	No.	No.
ENGLD. & WALES ... *Totals*	240,411	243,885	236,877	221,438	156,359	121,322	113,680	130,282
I. London	32,152	31,385	29,874	30,434	20,473	15,323	14,548	17,899
II. South-Eastern	21.304	21,860	21,430	19,519	14,461	10,970	9,670	11.176
III. South Midland........	15.764	16,094	15.556	14,239	9,455	7,301	6.246	7,628
IV. Eastern	13,876	13,914	13,632	12,822	8,361	6,776	5,878	6,716
V. South-Western	11.105	11,270	11,064	10.461	8,647	6.965	5,730	6.332
VI. West Midland	27,718	27,987	27.235	25,029	18,189	13.684	12,613	13,997
VII. North Midland.......	15,888	16,476	15,914	14,725	9,516	7,471	6,799	8,236
VIII. North-Western.......	39,312	39,928	39,764	35.586	27,366	21,376	21,677	23,569
IX. Yorkshire	26,754	27,158	26.253	24,696	17,485	13,868	13,895	15.808
X. Northern	19,101	20,112	18,804	17,485	11,093	8,706	8,698	10,170
XI. Monmthsh. & Wales	17,437	17,701	17,351	16,412	11,313	8,882	7,926	8,751

D.—*Comparative Table of* CONSOLS, PROVISIONS, COAL, *and* PAUPERISM *in each* QUARTER *of* 1906-07-08.

Cols...	1	2	3	4			5			6	7	
	Average Prices of										PAUPERISM.	
				Price per Pound at the Metropolitan Cattle Market (Sinking the Offal).‡							Average Number of PAUPERS Relieved on the *Last Day* of each Week.	
Quarter ended	CONSOLS (for Money) per 100*l*. Stock.*	Average Minimum Rate per Cent. of DISCOUNT Charged by the Bank of England.*	WHEAT per Quarter.†	Beef.			Mutton.			Average Price of Seaborne COAL per Ton in the London Market.§		
				Inferior Quality.	Second Quality.	First Quality.	Inferior Quality.	Second Quality.	First Quality.		In-door.	Out-door.
	£ *s.* *d.*	£	*s.* *d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*s.* *d.*		
1906												
Mar. 31	90 2 8	4·00	28 6	4¼	5¼	6¾	7	8¼	9⅜	15 8‖	261,475	554,515
June 30	89 11 2	3·65	29 10	4¼	5¼	6¾	5⅞	7⅜	8⅝	15 2‖	242,777	527,291
Sept. 30	87 6 4	3·60	28 5	4⅛	5¼	6¾	6¾	7⅞	8⅞	15 4‖	236,139	515,043
Dec. 31	86 5 9	5·70	26 3	4	5¼	7¼	7⅛	8⅜	9⅜	16 8‖	255,324	524,293
1907												
Mar. 31	86 9 3	5·18	26 5	4¼	5⅜	7⅛	7	8¼	9⅜	19 11‖	265,450	540,392
June 30	84 18 2	4·19	29 0	4⅛	5½	7	6⅛	8	9¼	17 4‖	246,345	518,579
Sept. 30	82 15 2	4·25	32 6	4⅛	5⅝	7⅛	6⅜	8	9¼	20 4	239,173	510,842
Dec. 31	82 10 8	6·09	34 8	3¾	5⅛	7	6⅞	8⅛	9⅛	20 3	258,449	519,604
1908												
Mar. 31	86 5 11	4·24	33 2	3⅞	5¼	6¾	6⅜	8¼	9½	18 8	274,123	545,068
June 30	87 1 1	2·81	32 1	4¼	5⅞	7¼	5¼	7⅜	8½	17 2¶	259,533	525,118
Sept. 30	86 11 3	2·50	31 2	4	5¾	7¼	5⅜	7¼	8⅝	16 11¶	253,234	519,224
Dec. 31	84 6 6	2·50	31 8	4	5¾	7¼	5½	7¼	8½	17 3¶	273,455	541,619

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* The prices of Consols and the Rate of Discount are furnished by the Chief Cashier of the Bank of England.

† As published by the Board of Agriculture.

‡ Furnished by the Board of Agriculture.

§ Furnished by the Mineral Statistics Department of the Home Office.

‖ Sunderland coal only.

¶ Sunderland and Hartlepool coal only.

E.—ANNUAL DEATH-RATES *per* 1,000 *from* ALL CAUSES *and from certain* EPIDEMIC DISEASES *during the Fourth Quarter of* 1908.

Cols.......	1	2	3	4	5	6	7	8	9	10	11	12
		Death-Rate.										
	Birth-Rate.	Crude.	Corrected. *	Principal Epidemic Diseases. Cols. 5—11.	Small-Pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping Cough.	Fever.	Diarrhœa.	Deaths under 1 Year to 1,000 Births.
England and Wales	24·6	14·5	14·5	1·28	—	0·24	0·08	0·19	0·14	0·11	0·52	139
76 great towns	25·0	14·8	15·7	1·49	—	0·37	0·11	0·18	0·12	0·11	0·60	146
142 smaller towns	24·0	14·0	14·7	1·27	—	0·16	0·07	0·21	0·13	0·11	0·59	147
England and Wales, less the 218 towns	24·4	14·3	13·5	1·02	—	0·11	0·05	0·19	0·17	0·11	0·39	127

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* The corrected death-rates represent the crude death-rates in col. 2 multiplied by the respective factors for correction for differences of sex and age constitution of population. For construction and use of these factors, see "Annual Summary, 1907," pp. vii—viii.

No. II.—SCOTLAND.

BIRTHS, DEATHS, AND MARRIAGES, IN THE YEAR ENDED 31ST DECEMBER, 1908.

I.—*Serial Table:—Number of* BIRTHS, DEATHS, *and* MARRIAGES *in Scotland, and their Proportion to the Population estimated to the Middle of each Year, during each Quarter of the Years* **1908-1904** *inclusive.*

	1908.		1907.		1906.		1905.		1904.	
	Number.	Per 1,000.	Number.	Per 1,000.	Number.	Per 1,000.	Number.	Per 1,000.	Number.	Per 1,000.
1st Quarter—										
Births	32,503	27·0	31,508	26·8	32,976	28·3	32,004	27·8	32,894	28·5
Deaths........	23,997	20·0	22,635	19·2	20,488	17·6	20,820	18·1	22,240	19·3
Marriages ..	7,591	6·3	7,268	6·2	7,302	6·3	6,867	6·0	7,619	6·6
Mean Temperature	38°·8		39°·0		37°·9		40°·2		37°·9	
2nd Quarter—										
Births	35,611	29·6	34,511	29·0	34,960	29·7	35,476	30·4	35,082	30·4
Deaths........	19,499	16·2	20,119	16·9	19,306	16·4	18,763	16·1	19,519	16·9
Marriages ..	8,813	7·3	8,864	7·4	8,699	7·4	8,153	7·0	8,347	7·2
Mean Temperature	48°·9		47°·4		48°·7		49°·2		49°·3	
3rd Quarter—										
Births	32,612	26·8	31,427	26·1	32,109	27·0	33,044	28·1	32,967	28·3
Deaths........	16,325	13·4	15,721	13·1	16,439	13·8	16,412	13·9	16,882	14·5
Marriages ..	8,044	6·6	8,994	7·5	8,576	7·2	8,178	6·9	8,118	7·0
Mean Temperature	55°·2		54°·2		56°·0		55°·6		55°·4	
4th Quarter—										
Births	30,611	25·2	31,343	26·1	31,875	26·8	30,857	26·2	31,627	27·1
Deaths........	18,016	14·8	18,792	15·6	19,352	16·3	18,531	15·7	19,320	16·6
Marriages ..	7,135	5·9	8,134	6·7	8,546	7·2	8,045	6·8	8,169	7·0
Mean Temperature	45°·3		42°·5		43°·2		41°·9		42°·5	
Year— Population.			4,776,063		4,726,070		4,676,603		4,627,656	
Births			128,789	27·0	131,920	27·9	131,381	28·1	132,570	28·6
Deaths........			77,267	16·2	75,585	16·0	74,526	15·9	77,961	16·8
Marriages ..			33,260	7·0	33,123	7·0	31,243	6·7	32,253	7·0

II.—*Special Average Table:—Number of Births, Deaths, and Marriages in Scotland and in the Town and Country Districts for each Quarter of the Year ending* 31*st December*, 1908, *and their Proportion to the Population; also the Number of Illegitimate Births, and their Proportion to the Total Births.*

Registration Groups of Districts.	Total Births.		Illegitimate Births.		Deaths.		Marriages.	
	Number.	Annual Rate per Cent.	Number.	Per Cent. of Total Births.	Number.	Annual Rate per Cent.	Number.	Annual Rate per Cent.
1st Quarter—								
SCOTLAND	32,503	2·70	2,122	6·5	23,997	2·00	7,591	0·63
Principal towns	14,951	2·71	976	6·5	11,349	2·06	3,947	0·71
Large ,, ...	4,632	3·05	214	4·6	3,133	2 06	1,039	0·68
Small ,, ...	6,959	2 87	435	6·3	4,620	1·90	1,538	0·63
Mainland rural ...	5,411	2·37	467	8 6	4,426	1·94	922	0·40
Insular ,, ...	550	1·97	30	5·5	469	1·68	145	0·52
2nd Quarter—								
SCOTLAND	35,611	2·96	2,267	6·4	19,499	1·62	8,813	0·73
Principal towns	16,380	2·97	1,038	6·3	8,764	1·59	4,793	0·87
Large ,, ...	5,075	3·34	245	4·8	2,667	1·76	1,159	0·76
Small ,, ...	7,603	3·13	452	5·9	3,890	1·60	1,563	0·64
Mainland rural	6,065	2·66	508	8·4	3,679	1·61	1,247	0·55
Insular ,, ...	488	1·75	24	4·9	499	1·79	51	0·18
3rd Quarter—								
SCOTLAND	32,612	2·68	2,266	6·9	16,325	1·34	8,044	0·66
Principal towns ...	14,632	2·62	1,029	7·0	7,476	1·34	4,517	0·81
Large ,, ...	4,624	3·01	252	5·4	2,092	1·36	1,112	0·72
Small ,, ...	7,161	2·92	416	6·2	3,361	1·37	1,506	0·61
Mainland rural	5,632	2·44	511	9·1	3,014	1·31	864	0·37
Insular ,, ...	563	2·00	28	5·0	382	1·35	45	0·16
4th Quarter—								
SCOTLAND	30,611	2·52	1,958	6·4	18,016	1·48	7,135	0·59
Principal towns ...	13,778	2·47	895	6·5	8,395	1·50	3,532	0·63
Large ,, ...	4,318	2·81	221	5·1	2,443	1·59	855	0·56
Small ,, ...	6,673	2·72	386	5·8	3,595	1·47	1,416	0·58
Mainland rural ...	5,269	2·28	437	8·3	3,214	1·39	1,225	0·53
Insular ,, ...	573	2·03	19	3·3	369	1·31	107	0·38

Population of Scotland.

Population.	Scotland.	Principal Towns.	Large Towns.	Small Towns.	Mainland Rural.	Insular Rural.
By Census of 1901............	4,430,217	1,970,413	560,514	899,303	925,204	116,669
Estimated to the middle of 1908	4,826,587	2,215,857	609,099	973,419	916,183	112,029

III.—*Divisional Table:*—Marriages, Births, *and* Deaths *Registered in the Year ended* 31*st December*, 1908.

(Compiled from the Registrar-General's Quarterly Returns.)

1 DIVISIONS. (Scotland.)	2 Area in Statute Acres.	3 Population, 1901. (*Persons.*)	4 Marriages.	5 Births.	6 Deaths.
		No.	No.	No.	No.
Scotland .... *Totals*	19,069,500	4,472,103	31,583	131,337	77,837
I. Northern	2,330,092	112,175	440	2,131	1,749
II. North-Western	4,671,744	162,728	671	3,344	2,602
III. North-Eastern	2,317,773	460,371	2,843	12,348	7,082
IV. East Midland	2,565,126	665,215	4,601	17,953	11,139
V. West Midland	2,576,404	352,981	2,042	10,547	6,017
VI. South-Western	1,440,676	1,862,775	14,589	62,822	35,270
VII. South-Eastern	1,168,149	662,415	5,259	17,976	10,974
VIII. Southern	1,999,536	193,443	1,138	4,216	3,004

No. III.—GREAT BRITAIN AND IRELAND.

Summary *of* Marriages, *in the Year ended* 30*th September*, 1908; *and of* Births *and* Deaths, *in the Year ended* 31*st December*, 1908.

(Compiled from the Quarterly Returns of the respective Registrars-General.)

Countries.	[000's omitted.] Area in Statute Acres.	[000's omitted.] Population Middle 1908. Estimated.	Marriages.	Per 1,000 of Population.	Births.	Per 1,000 of Population.	Deaths.	Per 1,000 of Population.
		No.	No.	Ratio.	No.	Ratio.	No.	Ratio.
England and Wales	37,327,	35,349,	269,159	7·6	942,611	26·6	521,643	14·7
Scotland	19,070,	4,827,	32,582	6·7	131,337	27·2	77,837	16·1
Ireland	20,228,	4,364,	22,849	5·2	102,426	23·5	77,151	17·7
Great Britain and Ireland	76,625,	44,540,	324,590	7·3	1,176,374	26·4	676,631	15·2

Trade of United Kingdom, 1908-1907-1906.—*Distribution of* **Exports** *of British and Irish Produce and Manufactures from the United Kingdom, according to their Declared Real Value; and the Declared Real Value (Ex-duty) of* **Imports** *at Port of Entry, and therefore including Freight and Importer's Profit.*

Merchandise (*excluding Gold and Silver*) Imported from, and Exported to, the following Foreign Countries, &c.	[000's omitted.]					
	1908.		1907.		1906.	
	Imports from	*Exports to*	Imports from	*Exports to*	Imports from	*Exports to*
	£	£	£	£	£	£
Russia Northern ports	20,395,	11,455,	21,003,	9,816,	20,820,	7,871,
Southern ,,	7,775,	1,058,	10,427,	1,162,	9.233,	818,
Sweden	10,353,	6,364,	11,065,	6,845,	10,727,	5,600,
Norway	6,508,	4,089,	6,613,	4,521,	6,907,	3,725,
Denmark*	19,477,	4,731,	18,263,	5,529,	16,433,	4,670,
Germany†	38,037,	33,374,	38,781,	41,377,	38,033,	33,627,
Holland	36,359,	11,547,	36,838,	13,949,	36,652,	11,615,
Java	985,	3,064,	1,107,	3,252,	537,	2,922,
Belgium†	27,153,	11,661,	28,284,	12,841.	29,098,	11,592,
France†	48,077,	22,403,	52,827,	23.640,	53,816,	20,495,
Portugal†	2,953,	2,436,	3,547,	2,693,	3,343,	2,605,
Spain†	13,345,	5,303,	16,847,	5,116,	15,842,	4,641,
Italy†	3,441,	15,034,	3,852,	14,132,	3,611,	11.185,
Austria-Hungary	1,304,	4,304,	1,089,	4.630,	1,214,	2,369,
Greece	1,913,	1,906,	1,979,	1,786,	2.223,	1,411,
Roumania	3,434,	2,003,	5,085,	2,108,	3,613,	1,591,
Turkey (European and Asiatic) and Crete	5,182,	6,977,	5,973,	7,525,	6,079,	8,099,
Egypt	17,593,	9,588,	22,225,	10,029,	16,857,	8,936,
Philippine Islands and Guam	1,676,	1,060,	2,099,	1.336,	1,658,	1,527,
China‡	3,042,	9.217,	3,471,	12,035.	3,304,	12,237,
Japan§	2,926,	9,912,	3,242,	12,048,	2,953,	12,913,
United States Atlantic	124,175,	21,289,	131,131,	30,100,	127,738,	27,142,
Pacific			2,518,	810,	3,367,	647,
Peru	2,887,	1,382,	2,807,	1,982.	1,681,	1,344,
Chile	7,383,	3,956,	6,044,	7,348,	6,295,	6,084,
Brazil	6,939,	8,145,	9,733,	10,245,	9,115,	7,653,
Argentine Republic	35,751,	16.434,	26,478,	17,814,	23,809,	19,430,
Other countries	14,197,	22,787,	15,369,	24,177,	10,844,	21,660,
Total—Foreign Countries	463,260,	251,481,	488,697,	288,846,	465,802,	254,409,
BRITISH POSSESSIONS.						
Channel Isles	1,602,	1,283,	1,819,	1,193,	1,559,	1,140,
Nigerian Protectorate	2,109,	2,536,	1,955,	1,302,	1,556,	920,
Cape of Good Hope	6,105,	8,020,	7,270,	9.708,	5,541,	10,501,
Brit. India, excluding Burmah	27,348,	44,797,	41,254,	48,500,	35,486,	41,582,
Burmah	2,277,	4,667,	2,701,	3,635,	2,344,	3,569,
Straits Settlements (including Malay States)	7,945,	3,385,	9,020,	3,888,	8,903,	5,521,
Ceylon	5,135,	1,762,	5,231,	1,809,	4,448.	1,575,
Australia	29,079,	22,931,	33,871,	24,077,	29,143.	20,230,
New Zealand	14,665,	8,764,	17,783,	8,700,	15,605,	7,391,
Canada	26,287,	12,223,	28,035,	17,087,	30,331,	13,647,
British West Indies (including Bahamas)	2,143,	2,300,	1,988,	2,639,	2,109,	2,188,
Other Possessions	5,186,	13,071,	6,282,	14,821,	5,161,	13,000,
Total—British Possessions	129,881,	125,739,	157,207,	137,359,	142,186,	121,264,
Total — Foreign Countries and British Possessions	593,141,	377,220,	645,904,	426,205,	607,988,	375,673,

* Including Faroë Islands.
† Excluding Colonies.
‡ Excluding Hong Kong and Macão.
§ Including Formosa.

Trade of United Kingdom, for the Years 1908-1903.—*Declared Value of the Total Exports of* Foreign *and* Colonial *Produce and Manufactures from the United Kingdom to each Foreign Country and British Possession.*

Merchandise Exported to the following Foreign Countries, &c.	[000's omitted.] 1908.	1907.	1906.	1905.	1904.	1903.
	£	£	£	£	£	£
Russia { Northern ports	7,345,	7,312,	6,659,	6,248,	6,705,	6,825,
Russia { Southern ,,	513,	604,	424,	467,	350,	225,
Sweden and Norway	1,342,	{ 1,090, 445,	1,073, 488,	} 1,193,	1,118,	1,282,
Denmark*	518,	629,	520,	483,	363,	415,
Germany†	13,001,	15,374,	14,753,	13,060,	11,325,	10,967,
Holland†	4,291,	5,039,	5,229,	4,845,	4,709,	5,354,
Java	22,	18,	16,	19,	103,	13,
Belgium	5,413,	6,487,	5,159,	4,755,	4,423,	3,949,
France†	9,506,	10,001,	8,340,	7,091,	6,448,	7,347,
Portugal†	539,	614,	654,	575,	607,	421,
Spain†	502,	786,	714,	599,	573,	671,
Italy†	1,040,	1,130,	1,317,	897,	851,	671,
Austria-Hungary	758,	786,	815,	746,	674,	672,
Greece	41,	57,	103,	81,	82,	83,
Roumania	48,	48,	76,	67,	96,	53,
Turkey (European and Asiatic) and Crete	201,	264,	327,	289,	240,	243,
Egypt	245,	209,	217,	212,	158,	120,
Philippine Islands and Guam‡	27,	36,	36,	298,	119,	43,
China §	75,	109,	106,	162,	81,	57,
Japan ‖	227,	213,	208,	135,	154,	126,
United States	21,177,	27,147,	25,475,	23,378,	19,075,	19,001,
Peru	144,	187,	109,	121,	141,	127,
Chile	223,	409,	319,	321,	273,	323,
Brazil	277,	304,	305,	296,	245,	230,
Argentine Republic	536,	476,	485,	379,	727,	592,
Other countries	1,741,	2,061,	1,770,	1,627,	1,819,	1,316,
Total to Foreign Countries	69,752,	81,845,	75,797,	68,544,	61,459,	61,236,
BRITISH POSSESSIONS.						
Channel Islands	239,	226,	226,	215,	216,	229,
Nigerian Protectorates	236,	174,	107,	115,	131,	129,
Cape of Good Hope	843,	882,	1,078,	986,	1,039,	1,221,
Brit. India (including Burmah)	1,416,	1,209,	1,229,	1,363,	903,	844,
Straits Settlements (including Malay States)	78,	68,	68,	57,	54,	74,
Ceylon	94,	89,	92,	68,	55,	72,
Australia	2,720,	3,054,	2,552,	2,486,	2,505,	1,985,
New Zealand	746,	740,	652,	571,	582,	593,
Canada	1,967,	2,122,	1,788,	1,854,	1,624,	1,631,
British West Indies (including Bahamas)	378,	373,	319,	302,	309,	239,
Other Possessions	1,197,	1,170,	1,195,	1,238,	1,428,	1,320,
Total to British Possessions	9,914,	10,127,	9,306,	9,255,	8,846,	8,337,
Total to British Possessions and Foreign Countries	79,666,	91,972,	85,103,	77,799,	70,304,	69,574,

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* Including Faroë Islands, Iceland and Greenland.

† Excluding Colonies.

‡ Included Ladrone Islands before 1905.

§ Excluding Hong Kong, Weihaiwei and Macão.

‖ Including Formosa.

Values of Imports *into the United Kingdom for the Years* 1906-07-08.*

[From the Monthly Trade Returns, December, 1908.]

	Year ended 31st December,			Increase (+) or Decrease (−) in 1908 as Compared with 1907.	Increase (+) or Decrease (−) in 1908 as Compared with 1906.
	1906.	1907.	1908.		
I. FOOD, DRINK, AND TOBACCO—	£	£	£	£	£
A. Grain and flour	67,880,589	75,409,156	72,734,817	− 2,674,339	+ 4,854,228
B. Meat, including animals for food	52,026,453	51,888,213	49,488,539	− 2,399,674	− 2,537,914
C. Other food and drink—					
(1.) Non-dutiable	68,823,115	67,460,229	68,587,646	+ 1,127,417	− 235,469
(2.) Dutiable	44,709,172	48,317,166	48,247,930	− 69,236	+ 3,538,758
D. Tobacco	4,718,827	4,215,832	5,189,176	+ 973,344	+ 470,349
Total, Class I	238,158,156	247,290,596	244,248,108	− 3,042,488	+ 6,089,952
II. RAW MATERIALS AND ARTICLES MAINLY UNMANUFACTURED—					
A. Coal, coke, and manufactured fuel	47,100	20,845	4,689	− 16,156	− 42,411
B. Iron ore, scrap iron, and steel	6,766,756	7,359,649	4,977,153	− 2,382,496	− 1,789,603
C. Other metallic ores	9,030,144	10,128,132	8,907,960	− 1,220,172	− 122,184
D. Wood and timber	27,507,410	27,093,054	24,306,059	− 2,786,995	− 3,201,351
E. Cotton	55,749,640	70,458,197	55,834,966	−14.623,231	+ 85,326
F. Wool	30,515,718	36,459,820	30,753,990	− 5,705,830	+ 238,272
G. Other textile materials	17,024,713	18,011,524	13,714,721	− 4,296,803	− 3,309,992
H. Oil seeds, nuts, oils, fats, and gums	25,634,214	30,697,416	28,513,061	− 2,184,355	+ 2,878,847
I. Hides and undressed skins	10,699,696	10,752.733	9,423,304	− 1,329,429	− 1,276,392
J. Materials for paper making	3,935,409	4,363,297	4,610,892	+ 247,595	+ 675,483
K. Miscellaneous	24,191,914	25,904,204	22,441,949	− 3,462,255	− 1,749,965
Total, Class II.	211,102,714	241,248,871	203,488,744	−37,760,127	− 7,613,970
III. ARTICLES WHOLLY OR MAINLY MANUFACTURED—					
A. Iron and steel and manufactures thereof	8,359,752	7,215,177	7,679,655	+ 464,478	− 680,097
B. Other metals and manufactures thereof	28,231,726	28,932,812	21,675,449	− 4,257,363	− 3,556,277
C. Cutlery, hardware, implements (except machine tools), and instruments	3,771,616	4,072,372	3,750,029	− 322,343	− 21,587
D. Electrical goods and apparatus (other than machinery and telegraph and telephone wire)	1,187,625	1,247,650	1,263,757	+ 16,107	+ 76,132
E. Machinery	5,126,972	5,311,681	4,556,762	− 754,919	− 570,210
F. Ships (new)	28,400	27,015	18,199	− 8,816	− 10,201
G. Manufactures of wood and timber (including furniture)	2,016,728	1,920,716	1,970,879	+ 50,163	− 45,849
H. Yarns and textile fabrics—					
(1.) Cotton	9,702,140	9,871,076	9,475,655	− 395,421	− 226,485
(2.) Wool	12,075,838	10,789,739	9,500,020	− 1,289,719	− 2,575,818
(3.) Other materials	20.082,092	20,741,024	18,939,089	− 1,801,935	− 1,143,003
I. Apparel	4,729,849	4,542,257	4,200,793	− 341,464	− 529,056
J. Chemicals, drugs, dyes, and colours	10,104,111	11,629,978	10,199,567	− 1,430,411	+ 95,456
K. Leather and manufactures thereof (including gloves, but excluding boots and shoes)	11,903,235	10,761,940	11,562.426	+ 800,486	− 340,809
L. Earthenware and glass	4,219,162	4,052,434	3,685,452	− 366,982	− 533,710
M. Paper	5,728,505	5,673,887	5,799,950	+ 126,063	+ 71,445
N. Miscellaneous	28,917,253	28,114,534	25,846,353	− 2,268,181	− 3,070,900
Total, Class III	156,185,004	154,904,292	143,124,035	−11,780,257	−13,060,969
IV. MISCELLANEOUS AND UNCLASSIFIED (including parcel post)	2,442,626	2,364,183	2,279,836	− 84.347	− 162,790
Total	607,888,500	645,807,942	593,140,723	−52,667,219	−14,747,777

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* The values of the imports represent the cost, insurance, and freight; or, when goods are consigned for sale, the latest sale value of such goods.

Values of **Exports** *of British and Irish Produce and Manufactures for the Years* **1906-07-08.***

[From the Monthly Trade Returns, December, 1907.]

	Year ended 31st December,			Increase (+) or Decrease (−) in 1908 as Compared with 1907.	Increase (+) or Decrease (−) in 1908 as Compared with 1906.
	1906.	1907.	1908.		
I. FOOD, DRINK, AND TOBACCO—	£	£	£	£	£
A. Grain and flour	2,571,796	3,089,163	3,524,943	+ 435,780	+ 953,147
B. Meat, including animals for food	1,339,363	1,309,218	1,052,070	− 257,148	− 287,293
C. Other food and drink	16,143,751	17,068,769	15,968,213	− 1,100,556	− 175,538
D. Tobacco	1,060,660	1,262,498	1,398,025	+ 135,527	+ 337,365
Total, Class I.	21,115,570	22,729,648	21,943,251	− 786,397	+ 827,681
II. RAW MATERIALS AND ARTICLES MAINLY UNMANUFACTURED—					
A. Coal, coke, and manufactured fuel	31,504,291	42,118,994	41,615,923	− 503,071	+10,111,632
B. Iron ore, scrap iron, and steel	596,823	573,449	413,692	− 159,757	− 183,131
C. Other metallic ores	176,091	189,685	77,573	− 112,112	− 98,518
D. Wood and timber	91,575	111,841	97,592	− 14,249	+ 6,017
E. Cotton	...	...	...	...	...
F. Wool	2,902,089	3,207,904	2,662,600	− 545,304	− 239,489
G. Other textile materials	164,248	227,397	245,470	+ 18,073	+ 81,222
H. Oil seeds, nuts, oils, fats, and gums	2,824,083	3,429,748	3,090,937	− 338,811	+ 266,854
I. Hides and undressed skins	2,209,753	1,817,217	1,424,819	− 392,398	− 784,934
J. Materials for paper making	713,970	753,001	543,926	− 209,075	− 170,044
K. Miscellaneous	2,084,457	2,573,845	2,214,079	− 359,766	+ 129,622
Total, Class II.	43,267,380	55,003,081	52,386,611	− 2,616,470	+ 9,119,231
III. ARTICLES WHOLLY OR MAINLY MANUFACTURED—					
A. Iron and steel and manufactures thereof	39,840,595	46,563,386	37,428,413	− 9,134,973	− 2,412,182
B. Other metals and manufactures thereof	10,133,202	11,674,131	8,860,151	− 2,813,980	− 1,273,051
C. Cutlery, hardware, implements (except machine tools), and instruments	5,881,907	6,434,002	5,495,164	− 938,838	− 386,743
D. Electrical goods and apparatus (other than machinery, and telegraph and telephone wire)	2,381,743	2,469,927	1,942,106	− 527,821	− 439,637
E. Machinery	26,771,889	31,743,253	31,018,912	− 724,341	+ 4,247,023
F. Ships (new)	8,644,171	10,018,113	10,566,990	+ 548,877	+ 1,922,819
G. Manufactures of wood and timber (including furniture)	1,305,696	1,407,932	1,256,545	− 151,387	− 49,151
H. Yarns and textile fabrics—					
(1.) Cotton	99,578,915	110,437,092	95,068,464	−15,368,628	− 4,510,451
(2.) Wool	31,843,681	31,158,857	28,389,621	− 5,769,236	− 3,454,060
(3.) Other materials	14,993,323	16,503,896	12,415,972	− 4,087,924	− 2,577,351
I. Apparel	9,064,112	9,561,642	8,854,865	− 706,777	− 209,247
J. Chemicals, drugs, dyes, and colours	15,521,288	17,052,755	16,288,855	− 763,900	+ 767,567
K. Leather and manufactures thereof (including gloves, but excluding boots and shoes)	4,431,824	4,559,037	3,832,683	− 726,354	− 602,141
L. Earthenware and glass	3,659,508	4,048,893	3,699,398	− 349,495	+ 39,890
M. Paper	2,063,816	2,344,230	2,315,631	− 28,599	+ 251,815
N. Miscellaneous	29,409,526	33,048,127	29,627,317	− 3,420,810	+ 217,791
Total, Class III	305,528,196	342,025,273	297,061,087	−44,964,186	− 8,467,109
IV. MISCELLANEOUS AND UNCLASSIFIED (including parcel post)	5,664,192	6,277,081	5,828,630	− 448,451	+ 164,438
Total	375,575,338	426,035,083	377,219,579	−48,815,504	+ 1,644,241

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* The values of the exports represent the cost and the charges of delivering the goods on board the ship, and are known as the "free on board" values.

SHIPPING.—(United Kingdom.)—*Account of Tonnage of Vessels Entered and Cleared with Cargoes, from and to Various Countries, during the* Years *ended Dec.*, 1908-07-06.

Countries from whence Entered and to which Cleared.	Total British and Foreign.					
	1908.		1907.		1906.	
	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.
FOREIGN COUNTRIES.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Russia: Northern ports	2,556,348	2,227,803	2,364,724	1,950,276	2,293,975	1,880,022
Russia: Southern ,,	610,028	185,766	833,041	256,856	780,788	277,699
Russia: Pacific ,,	2,077	5,007	1,506	2,045	—	12,766
Sweden	1,536,161	2,564,635	1,659,457	2,315,187	1,805,891	2,228,420
Norway	1,418,468	1,446,331	1,483,983	1,302,369	1,567,137	1,232,893
Denmark	533,424	1,994,807	515,010	1,971,543	492,941	1,838,687
Germany	2,273,993	6 058,108	2,287,990	6,452,876	2,842,042	5,448,404
Netherlands	2,698,595	3,148,710	2,676,470	3,913,871	2,775,614	3,348,761
Belgium	2,109,211	2,832,568	2,169,389	2,717,777	2,332,566	2,894,846
France	2,813,149	6,570,444	2,958,602	6,706,000	2,789,166	6,116,142
Spain	2,982,510	1,701,283	3,542,351	1,715,945	3,706,301	1,816.609
Portugal	264,155	654,804	247,705	673,319	250,497	647,568
Italy	362,255	4,605,768	321,297	4,470,759	265,172	4,270,357
Austria-Hungary	82,439	651,775	73,898	697,372	103,142	463,629
Greece	150,350	268,334	241,125	229,957	214,086	230,739
Turkey	217,317	406,585	242,948	386,527	296.249	354,139
Roumania	248.985	218,242	387,409	289,161	307,144	146,168
Egypt	386,566	1,407,375	421,615	1,574,892	420,052	1,504,532
Algeria	324,518	499,647	305,394	553,471	259,235	454,816
Portuguese East Africa	162,892	303,207	161,512	310,441	77,474	323,999
United States of America	7,211,630	5,282,665	7,317,814	5,836,877	7,546,987	5,767,874
Mexico, Foreign W. Indies, and Central America	356,949	509,224	377,851	543,348	320,327	548,241
Colombia	16,220	44,946	16,588	67,308	82,649	159,447
Brazil	205,064	1,057,299	246,933	1,087,028	220,758	903,929
Peru	152,880	126,050	81,757	116,815	108,861	92,841
Chile	284,817	583,580	234,109	690,255	188,893	522,404
Uruguay	24,621	478,992	25,238	439,739	7,612	485,296
Argentine Republic	2,029,342	2,095,571	1,611,621	1,955,840	1,628,751	1,976,961
China	40,745	43,421	30,742	110,623	21,309	110,659
Java	75,502	217,128	86,606	203,103	48,755	203,345
Japan	448,003	608,952	396,863	616,812	400,072	558,750
Other countries	680,522	726,010	585,437	599,603	456,714	569,113
Total, Foreign Countries.	33,259,736	49,525,037	33,906,985	50,757,995	34,611,160	47,390,056
BRITISH POSSESSIONS.						
North American Colonies	2,427,788	1,934,733	2,471,284	1,897,318	2,493,336	1,868,507
British India	1,471,714	1,519,167	2,036,490	1,547,217	1,752,371	1,508,600
Mauritius, Ceylon, Straits Settlements, & Hong Kong	65,808	322,084	70,661	388,226	68,659	359,274
Australia	953,273	829,340	956,315	796,966	936,587	755,708
New Zealand	325,455	416,458	361,305	384,312	353,961	420,051
West Indies	246,934	299,409	215,489	268,954	194,685	162,431
Channel Islands	436,024	322,789	438,738	325,383	406,149	321,380
Gibraltar and Malta	74,488	323 571	91,828	334,776	88,340	366,691
British South Africa	469,648	641,103	470,402	669,915	728,046	713,112
Other possessions	392.897	466,214	383,013	473,874	326,220	432,864
Total, British Possessions	6,864,029	7,074,868	7,495,525	7,086,941	7,348,354	6,908,618
TOTAL FOREIGN COUNTRIES AND BRITISH POSSESSIONS.						
Twelve Months ended December, 1908	40,123,765	56,599,905	—	—	—	—
Twelve Months ended December, '07	—	—	41,402,510	57,844,936	—	—
Twelve Months ended December, '06	—	—	—	—	41,959,514	54,298,674

BANK OF ENGLAND.

Pursuant to the Act 7th and 8th Victoria, cap. 32 (1844),

[0,000's omitted.]

1	2	3	4	5	6	7
Issue Department.					Collateral Columns.	
Liabilities.		Assets.				
Notes Issued.	Dates. (Wednesdays.)	Government Debt.	Other Securities.	Gold Coin and Bullion.	Notes in Hands of Public. (Col. 1 minus col. 16.)	Minimum Rates of Discount at Bank of England.
£ Mlns.	1908.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	Per cnt.
50,05	Jan. 1	11,02	7,43	31,60	29,52	6
52,18	,, 8	11,02	7,43	33,73	28,95	
53,17	,, 15	11,02	7,43	34,72	28,37	5
54,72	,, 22	11,02	7,43	36,27	28,26	4
55,77	,, 29	11,02	7,43	37,32	28,03	
54,84	Feb. 5	11,02	7,43	36,39	28,15	
55,25	,, 12	11,02	7,43	36,80	27,87	
55,86	,, 19	11,02	7,43	37,41	27,58	
56,41	,, 26	11,02	7,43	37,96	27,81	
56,36	Mar. 4	11,02	7,43	37,91	28.21	3½
57,03	,, 11	11,02	7,43	38,58	27,96	
57,66	,, 18	11,02	7,43	39,21	27,78	3
57,83	,, 25	11,02	7,43	39,38	28.26	
56,77	April 1	11,02	7,43	38,31	28,91	
55,73	,, 8	11,02	7,43	37,27	28,91	
53,80	,, 15	11,02	7,43	35,34	29,14	
54,06	,, 22	11,02	7,43	35,61	28,54	
54,39	,, 29	11,02	7,43	35,94	28,65	
54,38	May 6	11,02	7,43	35,93	28,72	
54,05	,, 13	11,02	7,43	35,60	28,45	
54,50	,, 20	11,02	7,43	36,05	28,31	
54,65	,, 27	11,02	7,43	36,20	28,46	2½
55,14	June 3	11,02	7,43	36,69	29,16	
54,90	,, 10	11,02	7,43	36,45	29,02	
55,74	,, 17	11,02	7,43	37,29	28,79	
56,30	,, 24	11,02	7,43	37,85	28,99	
55,48	July 1	11,02	7,43	37,03	29,98	
54,63	,, 8	11,02	7,43	36,18	29,75	
54,67	,, 15	11,02	7,43	36,22	29.47	
54,58	,, 22	11,02	7,43	36,13	29.47	
54 04	,, 29	11,02	7,43	35,59	29,53	
52,93	Aug. 5	11,02	7,43	34.48	29,90	
53,36	,, 12	11,02	7,43	34,91	29,53	
55,16	,, 19	11,02	7,43	36,71	29,10	
55,53	,, 26	11,02	7,43	37,08	29,25	
55,17	Sept. 2	11,02	7,43	36,72	29,49	
55,02	,, 9	11,02	7,43	36,57	29,10	
55,24	,, 16	11,02	7,43	36,78	28,82	
55,37	,, 23	11,02	7,43	36,92	28,80	
54,80	,, 30	11,02	7,43	36,35	29,55	
53,78	Oct. 7	11,02	7,43	35,33	29,43	
53,50	,, 14	11,02	7,43	35,05	29,04	
53,45	,, 21	11,02	7,43	35,00	28,89	
53,20	,, 28	11,02	7,43	34,75	28,56	
52,67	Nov. 4	11,02	7,43	34,22	28,94	
52,54	,, 11	11,02	7,43	34,09	28,80	
52,62	,, 18	11.02	7,43	34,17	28,40	
52,36	,, 25	11,02	7,43	33,91	28,53	
51,48	Dec. 2	11,02	7,43	33.03	28,99	
50,73	,, 9	11,02	7,43	32,28	28,94	
49,86	,, 16	11.02	7,43	31,41	29,15	
47,93	,, 23	11,02	7,43	29,48	30,04	
47,86	,, 30	11,02	7,53	29,41	29,75	

—Weekly Return.

for Wednesday in each Week, during the Year **1908.**

[0,000's omitted.]

8	9	10	11	12	13	14	15	16	17	18
Banking Department.										
Liabilities.						Assets.				Totals of Liabilities and Assets.
Capital and Rest.		Deposits.		Seven Day and other Bills.	Dates. (Wednesdys.)	Securities.		Reserve.		
Capital.	Rest.	Public.	Private.			Government.	Other.	Notes.	Gold and Silver Coin.	
£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	1908.	£ Mlns.	£ Mlns	£ Mlns.	£ Mlns.	£ Mlns.
14,55	3,29	7,56	52,66	,5	Jan. 1	15.83	40,81	20,53	,94	78,11
14,55	3,41	5,27	45,08	,6	„ 8	16,33	27,76	23,23	1,05	68,37
14,55	3,47	4,48	44,55	,7	„ 15	14,33	26,91	24,80	1,07	67,11
14,55	3,49	6,75	43,33	,7	„ 22	14,33	26,34	26,46	1,06	68,20
14,55	3,51	8,88	42,10	,6	„ 29	14,33	25,84	27,74	1,19	69,10
14,55	3,53	10,68	40,46	,5	Feb. 5	14,33	27,09	26,69	1,17	69.27
14,55	3,56	13,65	39,81	,4	„ 12	14,33	28,68	27,38	1,24	71,62
14,55	3,58	15,34	39,99	,7	„ 19	14,33	29,59	28,28	1,33	73.53
14,55	3,60	17,18	43,73	,7	„ 26	14,33	34,84	28,60	1,37	79,13
14,55	3,68	18,71	40,76	,5	Mar. 4	14,32	33,92	28,15	1,37	77.76
14.55	3,69	19,26	41,65	,5	„ 11	13,76	34,96	29,07	1,42	79.21
14,55	3,70	19,57	41,38	,7	„ 18	13,76	34,23	29,87	1,41	79.27
14,55	3,78	19,84	43,70	,8	„ 25	13,76	37,25	29,57	1,38	81,96
14,55	3,79	15,60	43,46	,6	April 1	13,76	34,44	27,86	1,41	77,46
14,55	3,18	11,22	43,74	,5	„ 8	13,76	30,78	26,81	1,41	72,75
14,55	3,19	10,66	41,42	,8	„ 15	13,76	30,03	24,66	1,46	69,91
14,55	3,20	10,37	42,76	,7	„ 22	13,86	30,21	25,51	1,37	70,95
14,55	3,21	9,99	43,13	,6	„ 29	14,31	29,48	25,75	1,41	70,95
14,55	3,21	9,00	44,36	,5	May 6	14,31	29,66	25,66	1,54	71,17
14,55	3,22	9,38	43,43	,5	„ 13	14,57	29,04	25.60	1,43	70,64
14,55	3,20	10,41	43,04	,6	„ 20	14,57	28,99	26.19	1,52	71,28
14,55	3,21	10,43	42,81	,6	„ 27	14,57	28,83	26,19	1,47	71,06
14,55	3,16	9,80	44,24	,5	June 3	15,01	29,30	25,98	1,50	71,79
14,55	3,17	9,76	44,33	,5	„ 10	15,01	29.43	25,88	1,54	71.86
14.55	3,16	9,78	46,03	,5	„ 17	15,07	29,98	26,96	1,57	73,58
14,55	3,17	10,17	46.17	,6	„ 24	15,24	30,02	27,31	1,55	74,12
14,55	3,21	9,65	51,20	,5	July 1	15,23	36,35	25,51	1.57	78,66
14.55	3,38	4,88	45,83	,4	„ 8	15,23	30,00	24.88	1,59	71,69
14,55	3,39	5,32	47,80	,7	„ 15	15,23	29,11	25,20	1,61	71,14
14,55	3,42	6,50	46,79	,5	„ 22	15,23	29,33	25,11	1,64	71,31
14,55	3,43	5,85	46,06	,3	„ 29	15,05	28,84	24,51	1,53	69,93
14,55	3,45	5,24	45,38	,3	Aug. 5	15,53	28,52	23,03	1.57	68.66
14,55	3,47	5,15	45,55	,3	„ 12	15,53	27,74	23,84	1,64	68,75
14,55	3,48	8,09	44,66	,5	„ 19	15,53	27,66	26,05	1,58	70,83
14,55	3,46	7,88	44,23	,4	„ 26	15,53	26,71	26,28	1.65	70,17
14,55	3,68	6,70	44,59	,3	Sept. 2	15,53	26,72	25.67	1,63	69.55
14.55	3,68	5,70	44,51	,3	„ 9	15,53	26,43	25,93	1,58	69,47
14,55	3,68	6,35	45,25	,5	„ 16	15,53	26,34	26,41	1,60	69,88
14,55	3,71	7,64	44,29	,5	„ 23	15,53	26,50	26,56	1,65	70.25
14,55	3,69	8,09	42,52	,3	„ 30	15,73	26,24	25,25	1,67	68,89
14,55	3,10	4,34	46,60	,3	Oct. 7	16,63	26,03	24,35	1,61	68,62
14,55	3,11	4,05	46,71	,5	„ 14	16,63	25,91	24.44	1,49	68.46
14,55	3,12	4.53	46.08	,5	„ 21	16,03	26,11	24,55	1.64	68,33
14,55	3,12	7,65	41,80	,3	„ 28	14,73	25,66	24,64	1,62	66,65
14,55	3,12	6,35	42,36	,3	Nov. 4	14,73	26,36	23,68	1,65	66,42
14,55	3,12	6,07	41,74	,3	„ 11	14.73	25,42	23,74	1,63	65,52
14,55	3,14	9,00	40,02	,6	„ 18	14,73	26,18	21,21	1,63	66,76
14,55	3,14	9,28	42.79	,6	„ 25	14,73	29,59	23,83	1,67	69,82
14.55	3,09	8,06	41,56	,3	Dec. 2	14,73	28,49	22,49	1,59	67.31
14,55	3.10	7,15	40,71	,3	„ 9	14,73	27,65	21,80	1,67	65.84
14,55	3,12	7,24	41,64	,4	„ 16	14,73	29.54	20,72	1,60	66.59
14,55	3,11	7,96	42,56	,5	„ 23	14,73	34,15	17,89	1,46	68,24
14,55	3,13	7,92	53,60	,4	„ 30	14,73	45,09	18,11	1,32	79.25

GOLD AND SILVER BULLION AND SPECIE.—(United Kingdom.) —*Declared Real Value of*, IMPORTED AND EXPORTED, *for the* **Years 1908-07-06.**

[000's omitted.]

Countries.	1908.		1907.		1906.	
	Gold.	*Silver.*	Gold.	*Silver.*	Gold.	*Silver.*
Imported from—	£	£	£	£	£	£
Australasia	2,762,	35,	4,326,	71,	6,901,	81,
S. America, Brazil, Mexico, W. Indies	788,	43,	895,	256,	1,514,	535,
United States	118,	8,306,	654,	11,962,	71,	14,891,
	3,668,	8,384,	5,875,	12,289,	8,486,	15,507,
France	226,	391,	5,204,	382,	3,400,	422,
Germany, Holland, and Belgium	3,496,	453,	9,594,	532,	3,006,	536,
Portugal, Spain, and Gibraltar	409,	61,	213,	67,	129,	61,
Malta and Egypt	644,	32,	1,847,	29,	504,	70,
China, with Hong Kong and Japan	3,	—	50,	377,	—	327,
West Coast of Africa	1,137,	173,	1,181,	30,	797,	50,
British Possessions in South Africa	31,814,	11,	29,444,	22,	25,714,	72,
British East Indies	2,408,	—	2,135,	295,	3,228,	—
All other Countries	2,340,	822,	1,546,	1,961,	779,	243,
Totals Imported	46,145,	10,327,	57,089,	15,984,	46,043,	17,288,
Exported to—						
France	26,212,	730,	7,209,	1,521,	4,621,	1,292.
Germany, Holland, Belg., and Sweden	4,679,	665,	3,622,	396,	1,091,	386,
Russia	2,933,	365,	7,	102,	1,695,	110,
Portugal, Spain, and Gibraltar	85,	154,	54,	79,	243.	76,
Malta and Egypt	1,720,	94,	4,660,	320,	6,380,	192,
	35,629,	2,008,	15,552,	2,418,	14,030,	2,056,
B. India, China, Hong Kong, and Japan	3,746,	9,647,	6,128,	11,697,	4,681,	15,498,
United States	753,	201,	18,355,	1,	14,188,	—
South Africa	20,	1,	130,	14,	55,	8,
S. America, Mexico, W. Indies	6,759,	354,	7,686,	479,	7,789,	277,
All other Countries	3,062,	1,073,	3,015,	2,312,	1,874,	1,026,
Totals Exported	49,969.	13,284,	50,866,	16,921,	42,617,	18,865,
Excess of imports	—	—	6,223,	—	3,426,	—
„ exports	—	—	—	937,	—	1,577,

REVENUE OF THE UNITED KINGDOM.

Net Produce in Quarters in 1908, *and in Financial Years ended* 31*st March*, 1907-08, 1906-07, 1905-06, 1904-05.

[000's omitted.]

QUARTERS, ended	31st March, 1908.	30th June, 1908.	30th September, 1908.	31st December, 1908.	Total for Calendar Year 1908.
	£	£	£	£	£
Customs	7,760,	7,218,	6,815,	7,636,	29,429,
Excise	8,870,	7,270,	8,240,	10,170,	34,550,
Stamps and estate, &c., duties	7,240,	6,190,	6,140,	6,760,	26,330,
Taxes (Land Tax and House Duty)	2,230,	310,	20,	80,	2,640,
Post Office	5,780,	3,280,	4,130,	4,580,	17,770,
Telephone Service	—	360,	365,	400,	1,125,
Telegraph Service ...	1,050,	680,	935,	740,	3,405,
	32,930,	25,308,	26,645,	30,366,	115,249,
Property and Income Tax	24,450,	4,200,	1,540,	2,290,	32,480,
	57,380,	29,508,	28,185,	32,656,	147,729,
Crown Lands	150,	130,	105,	145,	530,
Interest on Advances	501,	5,	606,	39,	1,151,
Miscellaneous............	609,	670,	404,	416,	2,099,
Totals	58,640,	30,313,	29,300,	33,256,	151,509,

YEARS, ended 31st March,	1907-08.	1906-07.	1907-08.		Corresponding Years.	
			Less.	More.	1905-06.	1904-05.
	£	£	£	£	£	£
Customs	32,490,	33,115,	625,	—	34,475,	35,730,
Excise	35,720,	35,704,	—	16,	30,230,	30,750,
Stamps and estate, &c., duties	27,010,	27,034,	—	6,	21,150,	20,050,
Taxes (Land Tax and House Duty)	2,690,	2,600,	—	90,	2,670,	2,750,
Post Office	17,880,	17,170,	—	710,	16,880,	16,100,
Telephone Service	—	—	—	—	—	—
Telegraph Service ...	4,420,	4,255,	—	165,	4,130,	3,830,
	120,240,	119,878,	625,	987,	109,535,	109,210,
Property and Income Tax	32,380,	31,600,	—	780,	31,350,	31,250,
	152,620,	151,478,			140,885,	140,460,
Crown Lands	520,	520,	—	—	480,	470,
Interest on Advances	1,189,	1,098,	—	91,	1,099,	1,014,
Miscellaneous...........	2,209,	1,940,	—	269,	1,514,	1,426,
Totals	156,538,	155,036,	625,	2,127,	143,978,	143,370,
			NET INCR. £1,502.			

Note.—The figures for 1907-08 have been adjusted to give effect to Section 17 (5) of "The Finance Act, 1907" (7 Edw. VII, c. 13), with respect to Local Taxation Grants, and the figures for 1906-07 have been similarly adjusted for the purpose of comparison.

FOREIGN EXCHANGES.—*Quotations as under,* LONDON *on Paris, Hamburg, Calcutta;—and New York and Hong Kong, on* LONDON, *for* 1908.

1	2	3	4	5	6	7	8	9
			Calcutta.				Price per Ounce.	
DATES. (Tuesdays or nearest Dates.)	London on Paris. 3 m.d.	London on Hamburg. 3 m. d.	London on Calcutta. Demand.	Indian Council Bills. Minimum Price per Rupee.*	New York on London. 60 d. s.†	Hong Kong on London. 4 m. d.†	Gold Bars (Fine).	Standard Silver in Bars.
1908.			*s.* *d.*	*s.* *d.*	$	*s.* *d.*	*s.* *d.*	*d.*
Jan. 1	$25\cdot42\frac{1}{2}$	$20\cdot84$	1 $3\frac{13}{16}$	1 $3\frac{29}{32}$	$4\cdot79\frac{3}{4}$	1 $10\frac{1}{8}$	77 $9\frac{1}{2}$	$24\frac{7}{8}$
,, 14	$25\cdot42\frac{1}{2}$	$20\cdot79$	1 $3\frac{13}{16}$	1 $3\frac{29}{32}$	$4\cdot81\frac{7}{8}$	1 $10\frac{7}{8}$	77 9	$25\frac{13}{16}$
,, 28	$25\cdot37\frac{1}{2}$	$20\cdot72$	1 $3\frac{7}{8}$	1 $3\frac{29}{32}$	$4\cdot83\frac{3}{4}$	1 $10\frac{3}{4}$	77 9	$25\frac{1}{2}$
Feb. 11	$25\cdot36\frac{1}{4}$	$20\cdot73$	1 $3\frac{7}{8}$	1 $3\frac{29}{32}$	$4\cdot82\frac{1}{2}$	1 $11\frac{1}{8}$	77 9	$26\frac{1}{16}$
,, 25	$25\cdot37\frac{1}{2}$	$20\cdot72$	1 $3\frac{7}{8}$	1 $3\frac{29}{32}$	$4\cdot83\frac{1}{2}$	1 $10\frac{1}{2}$	77 9	$25\frac{13}{16}$
Mar. 10	$25\cdot33\frac{3}{4}$	$20\cdot71$	1 $3\frac{7}{8}$	1 $3\frac{29}{32}$	$4\cdot83\frac{1}{4}$	1 $10\frac{5}{8}$	77 9	$25\frac{1}{2}$
,, 24	$25\cdot32\frac{1}{2}$	$20\cdot68$	1 $3\frac{7}{8}$	1 $3\frac{29}{32}$	$4\cdot83\frac{1}{2}$	1 $10\frac{1}{2}$	77 $9\frac{1}{2}$	$25\frac{9}{16}$
Apl. 7	$25\cdot31\frac{1}{4}$	$20\cdot65$	1 $3\frac{27}{32}$	1 $3\frac{29}{32}$	$4\cdot84\frac{1}{4}$	1 $10\frac{5}{16}$	77 $10\frac{1}{4}$	$25\frac{3}{8}$
,, 21	$25\cdot31\frac{1}{4}$	$20\cdot66$	1 $3\frac{27}{32}$	1 $3\frac{29}{32}$	$4\cdot84\frac{3}{4}$	1 $10\frac{1}{16}$	77 $10\frac{3}{8}$	$25\frac{3}{16}$
May 5	$25\cdot31\frac{1}{4}$	$20\cdot66$	1 $3\frac{27}{32}$	1 $3\frac{29}{32}$	$4\cdot84\frac{5}{8}$	1 $9\frac{1}{8}$	77 $10\frac{3}{8}$	$24\frac{3}{16}$
,, 19	$25\cdot27\frac{1}{2}$	$20\cdot63$	1 $3\frac{27}{32}$	1 $3\frac{29}{32}$	$4\cdot85\frac{1}{8}$	1 $9\frac{3}{4}$	77 $10\frac{1}{2}$	$24\frac{3}{8}$
June 2	$25\cdot26\frac{1}{4}$	$20\cdot60$	1 $3\frac{27}{32}$	1 $3\frac{29}{32}$	$4\cdot85\frac{3}{8}$	1 $9\frac{5}{16}$	77 $10\frac{1}{4}$	$24\frac{1}{4}$
,, 16	$25\cdot26\frac{1}{4}$	$20\cdot58$	1 $3\frac{27}{32}$	1 $3\frac{29}{32}$	$4\cdot85\frac{3}{8}$	1 $10\frac{1}{8}$	77 $10\frac{3}{4}$	$24\frac{7}{8}$
,, 30	$25\cdot25$	$20\cdot58$		1 $3\frac{29}{32}$	$4\cdot85\frac{5}{8}$	1 $9\frac{7}{8}$	77 $10\frac{1}{2}$	$24\frac{3}{4}$
July 14	$25\cdot25$	$20\cdot55$			$4\cdot85\frac{3}{4}$	1 $9\frac{11}{16}$	77 $10\frac{1}{2}$	$24\frac{5}{8}$
,, 28	$25\cdot22\frac{1}{2}$	$20\cdot56$		1 $3\frac{29}{32}$	$4\cdot85\frac{3}{8}$	1 $9\frac{1}{2}$	77 $10\frac{1}{4}$	$24\frac{1}{4}$
Aug. 11	$25\cdot23\frac{3}{4}$	$20\cdot56$		1 $3\frac{29}{32}$	$4\cdot85$	1 $9\frac{1}{4}$	77 $10\frac{1}{4}$	24
,, 25	$25\cdot22\frac{1}{2}$	$20\cdot57$		1 $3\frac{29}{32}$	$4\cdot84\frac{3}{8}$	1 $9\frac{3}{16}$	77 $10\frac{1}{2}$	$23\frac{13}{16}$
Sept. 8	$25\cdot25$	$20\cdot57$		1 $3\frac{31}{32}$	$4\cdot85$	1 $9\frac{1}{4}$	77 $10\frac{1}{2}$	24
,, 22 ...	$25\cdot26\frac{1}{4}$	$20\cdot57$		1 $3\frac{15}{16}$	$4\cdot84\frac{7}{8}$	1 $9\frac{3}{16}$	77 $10\frac{3}{4}$	$24\frac{3}{16}$
Oct. 6	$25\cdot25$	$20\cdot57$		1 $3\frac{29}{32}$	$4\cdot85$	1 $9\frac{1}{8}$	77 $11\frac{1}{8}$	$23\frac{15}{16}$
,, 20	$25\cdot23\frac{3}{4}$	$20\cdot58$		1 $3\frac{29}{32}$	$4\cdot84\frac{3}{4}$	1 $9\frac{3}{16}$	77 $11\frac{5}{8}$	24
Nov. 3	$25\cdot26\frac{1}{4}$	$20\cdot60$		1 $3\frac{29}{32}$	$4\cdot83\frac{3}{4}$	1 $8\frac{11}{16}$	77 $10\frac{7}{8}$	$23\frac{1}{16}$
,, 17	$25\cdot25$	$20\cdot60$		1 $3\frac{29}{32}$	$4\cdot83\frac{3}{4}$	1 $8\frac{9}{16}$	77 $11\frac{1}{2}$	$23\frac{3}{16}$
Dec. 1 ...	$25\cdot26\frac{1}{4}$	$20\cdot62$		1 $3\frac{29}{32}$	$4\cdot84\frac{1}{2}$	1 $8\frac{1}{16}$	77 $11\frac{1}{8}$	$22\frac{5}{16}$
,, 15	$25\cdot30$	$20\cdot63$		1 $3\frac{29}{32}$	$4\cdot84\frac{3}{4}$	1 $8\frac{1}{4}$	77 $10\frac{1}{8}$	$22\frac{1}{2}$

* Wednesdays following. † Fridays following.

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STATISTICS *of* WOMEN'S LIFE *and* EMPLOYMENT.

By MISS B. L. HUTCHINS.

[Read before the Royal Statistical Society, Tuesday, 16th March, 1909, the Right Hon. Sir CHARLES W. DILKE, Bart., M.P., President, in the Chair.]

THE present Paper is an endeavour to show what information can be gleaned from the statistics now available as to the position of women in our own country in regard to life, employment and the family, with special attention to the comparative numbers of men and women.

Relative numbers.

The population in 1901 included in round numbers 15,729,000 males and 16,799,000 females. The excess female population amounts to 1,070,000. The disproportion has constantly increased since 1851, as the following table (from the General Report) shows:—

In 1,000 Persons.	1841.	1851.	1861.	1871.	1881.	1891.	1901.
Males	489	490	487	486·9	486·6	485	484
Females	511	510	513	513·1	513·4	515	516

The excess varies very much at different ages. The number of boys born exceeds the number of girls by about 35 to 40 per thousand, but more boys die at birth or soon after, and male infants appear altogether more susceptible to adverse influences, for their death-rate is higher for at least two years. After 15 years old the male death-rate again exceeds the female, and the excess of women is greatest in middle and later life.

Females per 1,000 males, 1901.

—5.	5—	10—	15—	20—	25—
1,003	1,005	1,000	1,019	1,119	1,114
35—	**45—**	**55—**	**65—**	**75—**	**85—**
1,068	1,079	1,140	1,252	1,380	1,699

Males and females in age-groups.

Ages.	Males.		Females.	
	Numbers.	Per Cent.	Numbers.	Per Cent.
—15	5,265,324	33·5	5,280,415	31·4
15—	3,080,166	19·6	3,286,899	19·6
25—	4,417,897	28·1	4,833,948	28·8
45—	2,304,154	14·6	2,541,287	15·1
65—	661,072	4·2	856,681	5·1
All ages	15,728,613	100·0	16,799,230	100·0

It is noteworthy that the disproportion of women is much higher in urban than in rural districts, and that in both it increased between the last two censuses, the increase being more marked in the rural districts.

Females per 1,000 males.

Ages.	Urban Districts.		Rural Districts.	
	1891.	1901.	1891.	1901.
—5	1,003	1,005	999	996
5—	1,008	1,009	996	995
10—	1,020	1,013	956	961
15—	1,074	1,063	866	877
20—	1,159	1,144	1,015	1,022
25—	1,112	1,126	1,046	1,069
35—	1,073	1,081	1,047	1,026
45—	1,111	1,091	1,056	1,040
55—	1,203	1,174	1,053	1,054
65—	1,331	1,336	1,067	1,087
75—	1,512	1,533	1,122	1,146
85—	1,990	1,921	1,411	1,409
All ages	**1,085**	**1,086**	**1,006**	**1,011**

The disproportion of women is, no doubt, partly due to the Imperial needs which compel a large number of men to emigrate to our actual or potential colonies and dependencies. It is impossible to say how many are to be thus accounted for; probably not a very large proportion in actual numbers, except in the upper classes. The census shows figures for the Army, Navy, and merchant seamen serving abroad, and in the General Report (p. 44) it is calculated that if these be added to the population of the United Kingdom the excess of females would be reduced to 793,420, and the proportion would be 1,050 to every 1,000 males, instead of 1,068. This does not, however, include men who are absent on private business.

The disproportionate number of women is mainly due to their lower death-rate, and this is generally accounted for as the advantage resulting from their comparatively sheltered life, and less exposure to accident and occupational disease. This assumption, no doubt, accounts for some part of the difference; women do not work on railways or as general labourers, or usually in the most dangerous processes of trades scheduled as dangerous. But the facts cannot be fully explained in this way. No doubt many more men than women die from accidents. But if deaths from causes special to women are added to the deaths from accident, the difference is greatly reduced.

	1907.	
	Deaths of Males.	Deaths of Females.
Accidents	10,895	4,889
Causes peculiar to women	—	4,672
Total	10,895 [1]	9,561 [1]

There is also the age factor to be considered. The death-rate of males and females at different ages is shown in the following table, for England and Wales, in 1891-1900 and 1907:—

	Under 1 per 1,000 Births.	Per 1,000 Living.						
		1—	2—	3—	4—	Under 5—	5—	10—
1891-1900—								
Males	167·77	42·97	15·91	9·84	7·14	62·71	4·31	2·45
Females	138·36	41·72	16·10	10·41	7·35	52·80	4·37	2·57
1907—								
Males	130·26	38·36	15·48	10·13	6·93	44·77	3·326	1·929
Females	104·49	36·21	14·84	9·71	7·64	37·02	3·405	2·009

	Per 1,000 Living.							
	15—	20—	25—	35—	45—	55—	65—	75—
1891-1900—								
Males	3·79	5·06	6·76	11·50	18·95	34·95	70·39	160·09
Females	3·67	4·46	6·08	9·59	14·74	28·41	60·72	146·46
1907—								
Males	2·861	3·816	5·568	9·480	16·930	33·682	94·141	—
Females	2·704	3·195	4·619	7·829	13·052	26·047	85·896	—

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[1] I have not attempted to reduce these figures to a death-rate, as it seems to me impossible to find a satisfactory basis for one.

It appears here that the superiority of the female life is most marked at the earliest and the latest ages. The male death-rate was higher than the female under 2 years old, 1891-1900, and under 4 years old, 1907. At such ages there is not much difference in the care and shelter given to boys and girls respectively, and the higher death-rate of boys cannot be thus explained. Up to 5 years old there is still not much difference, but from 5 to 15 girls usually are a good deal more sheltered and protected than boys, and less likely to run into dangerous places and positions; deaths from violence, for instance, are more than double as numerous among boys as among girls, but it curiously enough happens that the total male death-rate from 5 to 15 is the lower of the two, a condition which occurs at no other age-period except 2 to 5 in 1891-1900, and 4 to 5 in 1907. The excess of deaths of females at this age seems to be fairly enough distributed over the principal epidemic diseases—measles, scarlet fever and diphtheria—and deaths from phthisis kill twice as many girls at this age as boys. It is unnecessary to show these figures in detail, as they have no special bearing on my subject. We come next to the age-group, 15—20. Here the female life is again superior, though very slightly so—3·67 to 3·79. The difference from this point is progressively greater as the age advances, and the general death-rate rises. Over 75, when most men have given up active life, and are about as much sheltered as women if they are sheltered at all, their death-rate is, nevertheless, 160·09 as against 146·46 of women. There are 135 women old enough to claim an old-age pension to every 100 men. The longevity of women has also increased faster than the longevity of men in the seventy years for which we have a record.[2] The Registrar-General's table (Decennial Supplement, p. xxxix) shows the average life of men and women over a term of years:—

Average duration of life, England and Wales.

	1838-54.	1871-80.	1881-90.	1891-1900.
Males	39·91	41·35	43·66	44·13
Females........	41·85	44·62	47·18	47·77

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[2] It is rather interesting to notice that the most marked increase in the duration of women's lives took place in the period when the Factory Acts were coming into operation. 1844 saw the passing of the first Act for the regulation of women's hours and conditions of work in textile industries. In 1864 and 1867 Acts were passed regulating non-textile industries; and 1878 was the year of the great Consolidating Act which considerably improved administration. In this period the life of women was lengthened 1·58 years more than the life of men.

I do not wish to assert, but I suggest as an interesting point for discussion, that women, though physically weaker, appear to be in a sense constitutionally stronger, to have a more tenacious hold on life than men.[3]

Even in an industrial district, such as Lancashire, where a large proportion of young women work in the mills, their life is still conspicuously better than that of men at the same age. Curiously enough Durham, which is a mining district with very few women occupied, shows a higher death-rate of young women than young men.

Death rates, 1891-1900.*

	Lancashire.			Durham.		
	15—	20—	25—	15—	20—	25—
Males	4·41	5·57	7·79	4·88	5·83	6·41
Females	3·95	5·04	7·29	4·60	6·00	7·47

* The figures for 1907 are as follows:—

Death Rates.	Lancashire.			Durham.		
	15—	20—	25—	15—	20—	25—
Males	3·3	4·2	6·1	3·8	4·7	5·6
Females	3·0	3·5	5·4	3·7	4·4	6·3

The figures for female employment in these two counties were:—

Women.	Lancashire.			Durham.		
	15—	20—	25—35.	15—	20—	25—35.
Single	77·9	80·1	75·8	40·3	49·3	49·2
Married or widowed	24·4	25·2	19·2	1·4	1·6	2·6

The contrast seems to indicate that it is not the fact of employment, but the conditions both of life and employment that are prejudicial to women in these industrial centres.

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[3] It may also be remarked that the emigration of men not only removes a certain number, but it probably removes rather the stronger and more capable men, or a certain proportion of them; and this would tend to raise the male death-rate at home, in so far as the average male health and strength is thereby in some degree lowered.

In any case, it will be agreed that the greater average duration of life among women is sufficient to account for a large excess of women over men, over and above the emigration of many young men which contributes to the same result. We have to face the fact of a large surplus of adult women over men. This surplus is distributed very differently in town and country, and the table in the census, p. 139, of Summary Tables, England and Wales, yields some curious results. In the urban districts females number 108·6 to every 100 males; in the rural, only 101·1. This is, perhaps, partly due to an influx of girls into towns for domestic service; for although the percentage of domestic servants is rather higher in the country than in towns, the actual numbers are much less; and particular towns and residential urban districts show a very high percentage of servants. But the higher proportion of males in the country must be due in part, I think, to the higher rate of survival in the country. Thus in the urban districts the number of boys exceeds the number of girls in the first year of life only; and by a small proportion; 99·4 girls to 100 boys. In the rural districts there are, under one year, 98·7 girls to every 100 boys, and the boys slightly predominate up to the age of 12, then more markedly up to 20. In the urban districts females are in excess from the second year onwards; in the rural, from the age of 21 only; and taking all ages together the excess is proportionally very much greater in the urban districts.

Relative survival of boys and girls.

One interesting feature in the figures of the life-duration of boys and girls is that a diminution in infant mortality tends to promote the survival of boys relatively to girls, and thus to reduce the disproportion between the sexes. The number of boys born is somewhat greater than the number of girls; about 1,037 to 1,000 in the period 1891-1900. Any reduction in infant mortality will, therefore, automatically tend to increase the relative number of boys surviving and *vice versâ*. It follows that unhealthy districts, where infant mortality is high, are destroying a disproportionate number of males, while the healthier rural districts are helping to restore the balance.

The following table shows the relative survival of boys and girls in certain counties, classifying as "healthy" those that showed an infant death-rate of less than 115 and as "unhealthy" those that showed an infant death-rate of over 150. The figures refer to the decade 1891-1900, and are taken from the Registrar-General's Decennial Supplement, Part I.

Unhealthy counties.

County.	Boys surviving 1 Year.	Girls surviving 1 Year.	Boys per 10,000 Girls.
Lancashire	538,352	541,581	9,944
Staffordshire	168,251	168,980	9,957
Durham	164,947	163,452	10,091
E. Riding	54,611	54,501	10,020
W. Riding	326,914	330,799	9,882
Leicestershire	52,656	53,102	9,916
Nottinghamshire	72,891	73,494	9,918
Northumberland	75,084	75,103	9,997
London	560,530	557,970	10,046
Cheshire	93,174	92,620	10,060
Total unhealthy counties	2,107,410	2,111,602	9,981

Healthy counties.

County.	Boys surviving 1 Year.	Girls surviving 1 Year.	Boys per 10,000 Girls.
Salop	30,559	30,432	10,042
Somerset	60,731	59,834	10,150
Berks	31,818	31,455	10,115
Oxon	21,528	21,635	9,951
Bucks	20.203	20,269	9,967
Herefordshire	13,002	12,995	10,006
Herts	25,606	25,583	10,009
Rutland	2,300	2,245	10,245
Westmorland	7,274	7,230	10,061
Dorset	22,347	21,774	10,263
Wilts	30,851	30,488	10,119
Total healthy counties	266,219	263,940	10,081
England and Wales	3,876,396	3,875,037	10,003·5

The next table shows the relative survival of boys and girls under 1 year in certain specially unhealthy towns, on the same method as in the previous table, and in parallel columns, the numbers and proportions of boys and girls, under 5, from the census.

Registration District.	1891-1900.				1901.		
	Infant Mortality.	Boys Surviving —1 Year.	Girls Surviving —1 Year.	Boys per 10,000 Girls.	Boys under 5.	Girls under 5.	Boys per 10,000 Girls.
Liverpool	223	20,003	19,752	10,127	41,611	42,073	9,890
Preston	220	18,006	18,223	9,875	6,240	6,406	9,741
Manchester	211	19,417	19,831	9,791	31,881	32,194	9,903
Salford	206	29,712	30,285	9,811	13,173	13,409	9,824
Blackburn	186	25,788	26,263	9,819	6,622	6,695	9,891
Burnley	186	23,453	23,678	9.905	5,409	5,496	9,842
Oldham	178	24,195	24,676	9,805	6,975	7,074	9,860
Total urban districts, Lancs.	?	52,393	51,700	9,942	237,142	239,906	9,885
Total rural districts, Lancs.	?	2,672	2,604	10,261	12,842	12,619	10,176

The following short table shows the general results since 1901, a period in which infant mortality has been lower than in the previous decade.

England and Wales.

	Births of Boys per 1,000 Girls.	Total Infant Mortality.	Survival of Boys —1.	Survival of Girls —1.	Boys per 10,000 Girls.
1901	1,040	151	395,441	393,708	10,044
'02	1,039	133	408,810	406,703	10,052
'03	1,035	132	412,506	411,047	10,003
'04	1,037	145	404,944	403,053	10,047
'05	1,036	128	406,118	404,084	10,053
'06	1,041	132	407,869	403,317	10,100
'07	1,039	118	406,802	403,262	10,088

It is worth noticing that this gives a new aspect to the efforts now being made by medical officers and women inspectors in the more progressive towns to diminish the rate of infant mortality. There are persons, by no means the least thoughtful among us, who, while regarding these efforts to preserve infant life as a moral duty, yet have some misgiving as to their ultimate effect; they fear the weaklings may be preserved, and the survival of the fittest checked.[4] However that may be, it would seem from the foregoing figures that sanitary measures, at least, tend to increase the proportion of the "stronger sex" among the children who survive the dangerous period of infancy, and we arrive at the somewhat ironical conclusion that if we want a due proportion of the manly element in the population we must take care of it; a vigorous policy of neglect results in a surplus of women.

Marriage and widowhood.

Admitting, however, the presence of a large excess-number of women, how are these women provided for? Marriage is still the most important and extensively followed occupation for women, and includes over 5,700,000 women in England and Wales, or 49·6 per cent., nearly one half of the female population over 15.

The married women are spread over the age-groups in the following order:—

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[4] *Cf.* Shadwell, *Industrial Efficiency*, vol. I, p. 237. "Nature's way is to "produce a large surplus, and by eliminating the weak at the beginning and "selecting the strong, to make the race vigorous. Many persons think they "know a more excellent way, but they may be mistaken."

Age.	Total Women.	Married Women.	Per Cent. Married.
15—	1,638,621	25,392	1·6
20—	1,648,278	447,885	27·2
25—	2,769,886	1,781,022	64·3
35—	2,064,062	1,549,643	75·1
45—	1,505,982	1,061,938	70·5
55—	1,035,305	589,380	56·8
65—	598,138	220,292	36·8
75—	258,543	41,985	16·2
All over 15	11,518,815	5,717,537	49·6

We see that the proportion of women under 25 married is small, but from 25 onwards it is considerable, and from 35 it amounts to three-fourths; from 45 the percentage declines with advancing years. A large number of women survive their husbands and are left widows, partly because they are usually married at an earlier age, partly because their death-rate is lower. The proportion of widows is inconsiderable up to 35. We then get the following:—

Age.	Percentage Widowed.	Age.	Percentage Widowed.
35—	6·4	65—	52·1
45—	15·8	75—	72·6
55—	31·4		

In order to get a clearer view of the situation, let us omit the girls under 20, and range the others in larger classes, grouping the widowed and single together as not-married, or in the convenient German expression, "ehelos."

Age.	Married.	Per Cent.	Not Married.	Per Cent.
20—	2,228,907	50·5	2,189,257	49·5
35—	2,611,581	73·1	958,463	26·9
55—	851,657	45·0	1,040,329	55·0
All ages over 20	5,692,145	57·6	4,188,049	42·4

If the girls 15 to 20 are included, it works out at 49·6 married, 50·4 "ehelos," or not-married.

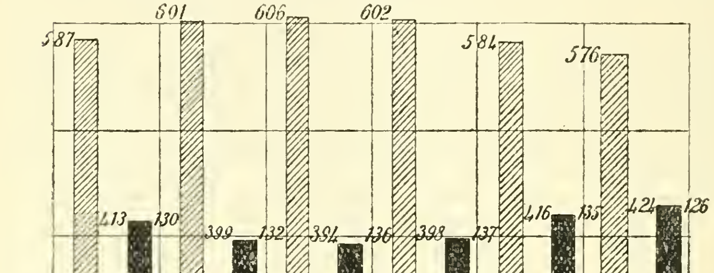
Marriage thus may be supposed at best (granting that all wives are supported by their husbands) to provide for about three-fourths of women, but for twenty years only, between 35 and 55. Before 35 and after 55 a very large proportion are not thus provided for. Some are of course maintained by brother, parent, or other relation;

but whatever theories we may hold about "economic independence," it is evident that for a large number of women "economic self-dependence" is nothing but a stern necessity. It may be noted also that the proportion of women married in the total female population over 20 is decreasing. It was :—

602 per 1,000 in 1881,
584 per 1,000 in 1891,
576 per 1,000 in 1901.

In 1,000 *women* 20 *years and upwards, the proportion married and the proportion not-married.*

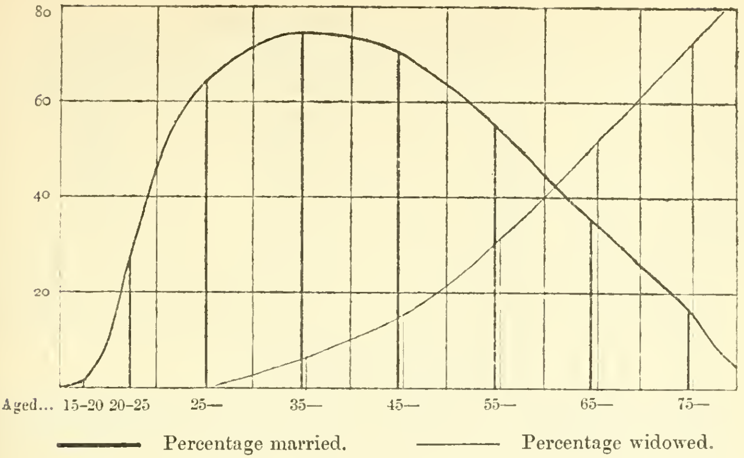
The shaded space indicates the married; the white space, single; and the black, widowed.



The proportion married in each age-group has also decreased since 1881 : most notably in the younger groups.

The proportion widowed has also decreased, but more slightly : from 137 per 1,000 in 1881 to 126 in 1901.

The proportion unmarried has increased from 261 in 1881 to 298 in 1901.



Occupation.

The number of women and girls over 15 in 1901 returned as occupied was 3,970,000, or 34·5 of all living. This proportion has recently been challenged (by Lady Grove, in the *Westminster Gazette*, 23rd January, 1909) as too small, and it has been asserted that thousands of women who are in fact wage-earners did not so return themselves at the Census, for different reasons; some because they did not consider it "genteel" thus to describe themselves. No doubt statistics of occupation have a large element of uncertainty, especially in the case of women. The percentage occupied has, however, varied so little from census to census that one is inclined to suppose it to be approximately correct, and comparison with the statistics of the Factory Department gives no ground, as we shall see presently, to suppose the census figures to be below the mark. The figure is, of course, inadequate in regard to women's *work* (as distinguished from *occupation*), because no account is taken of the enormous amount of work done at home, cooking, washing, cleaning, mending and making of clothes, tendance of children and nursing of the sick, done by women, especially in the working-class, who are yet not returned as belonging to any specific occupation.

It is misleading, however, to take this percentage, 34·5, as if it meant that only about one-third of all women enter upon a trade or occupation. As we shall see, a very much larger proportion of young women do so, but a great many of these leave work on marriage. The following table shows the percentage occupied in age-groups:—

Percentage of women occupied.

Age.	Occupied per 100 Single.	Occupied per 100 Married or Widowed.	Occupied per 100 Women.
15—	66·7	11·9	65·9
20—	73·5	10·9	56·3
25—	70·2	10·0	30·5
35—	64·1	13·1	22·5
45—	57·2	16·0	21·6
55—	44·6	17·5	20·7
65—	26·1	14·4	15·7
75—	10·3	7·2	7·1
All ages	67·0	13·2	36·1

Single women occupied.

This table shows that the employment of single women is largely an episode of early life, as the majority of young working women marry and leave work at marriage. This is shown by the rapid fall in the percentage occupied from the age of 25 or so. Girls' work is for the most part a "meanwhile employment." It is often stated by social investigators that the prospect of marriage makes working girls slack about organization and indifferent about training. Many girls seem for this reason to fail in some degree to realize their full industrial possibilities or to achieve their full industrial efficiency. In the case of those who do marry, and whose best years will be given to work of a kind socially far more important than the episodic employments carried on by them in mill, factory or workroom, their alleged lack of industrial efficiency is not, perhaps, of great consequence. But although a large majority of women are married before 35, and, as we know, the proportion married is greater in the working classes than among the middle and upper classes, yet it is a mistake to suppose that the mature single woman in industry is so rare as to be a negligible quantity. Take the age group, 35—44, as typical of the woman for whom work has become the central fact of life. There are nearly a quarter of a million single occupied women aged 35—44. Their principal occupations are as follows:—

	Number.	Per Cent.
General or local government	2,377	1
Professional occupations, &c.	32,523	13
[Teaching	17,347	7]
Domestic offices and services	107,407	44
[Domestic in-door servants	87,907	35]
Commercial	3,050	1
Agriculture	3,406	1
Paper, printing and stationery	3,147	1
Textiles	30,105	12
Dress	39,977	16
Food, lodging, &c.	14,931	6

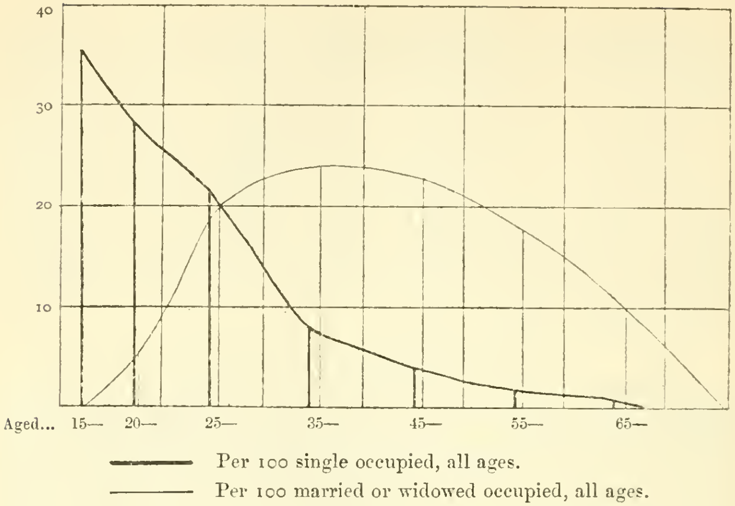
These women are, of course, a small minority of the age group, but their absolute numbers are considerable enough to show that self-dependence is a necessity for many even at the age when and in the class where marriage reaches its highest point of frequency. It will be very interesting when the figures for 1911 are collected and published to see whether this class of self-dependent women has or has not increased. No comparison is possible with the previous census, because the figures for single and married or widowed women occupied were not then separated, and as the married or widowed are very numerous at this age, no conclusion could be drawn from the totals.

Married or widowed women occupied.

The defect of the last table but one is that the married or widowed women who are occupied cannot be distinguished. Surely if the census cannot spare space to separate the three classes—single, married and widowed—it would be more logical to class together the single and widowed as a homogeneous group, they being alike "not married," *ehelos*, or dependent upon themselves. There are several reasons to suppose that the widowed occupied exceed the married occupied, relatively, at least, and it may be, even in actual numbers. There is, first of all, the obvious *à priori* argument that the widowed are likely to be worse off and in greater need of work. We have also an argument from analogy derived from the German census. Frau Elisabeth Gnauck-Kühne's study of "Die Deutsche Frau" shows that of married women only 12 per cent. are occupied, of widowed women as many as 44 per cent. The probabilities are that with us also the proportion of widowed who are occupied is much higher than the proportion of married who are occupied, but when the two classes are lumped together, as in our returns, it is very difficult to form an estimate.

The following table shows the proportions of the single occupied, and married or widowed occupied, in each age group as a percentage of the number occupied at all ages, instead of as a percentage of the total number in the age group, which is the more ordinary method.

Ages.	Per 100 Single Occupied, all Ages.	Per 100 Married or Widowed Occupied, all Ages.
15—	35·3	0·3
20—	28·8	5·4
25—	21·6	20·0
35—	8·0	24·0
45—	3·8	22·8
55—	1·8	17·4
65—	0·7	10·1
	100·0	100·0



The percentage of married or widowed women occupied is not accessible for towns on this method, and it must be owned the ordinary figures, percentage married or widowed occupied, do not tell us very much. The curve of the proportion of women married at different ages is in the shape of a rounded pyramid; the percentage rises from youth to middle life, and then falls from middle life to old age. The curve of widowhood, on the other hand, rises all the way, and is a steady slope upwards. These two curves, it is safe to say, are always the same in form, though they may differ in height in different places. But the curve of married or widowed women's employment varies greatly, not only in height but in form. The curve for England and Wales, for instance, begins low and then rises slowly from 25 to 55, and then falls to old age. The curve for Lancashire is quite a different shape; it is highest at first, and shows a steady slope downwards. From the age of 45 onwards it falls slightly below the curve for England and Wales, indicating, possibly, the greater foresight of the Lancashire operative in providing for his widow. The curve of some towns shows a little dip in the middle, very symbolical of what Madame Gnauck calls the "cleft" in women's industrial life. The curve for England and Wales, imperfect as it is, does indicate that at 45 and 55 the figures of occupation are influenced by the increasing proportion of widows. We can see from the figures that, as Madame Gnauck says, the industrial life of woman is not persistent, but is split in two. Her work is demanded in early life; and, probably, if girls were paid the full value of their services, which notoriously many of them are not (owing to the comparative absence of organisation), the majority of them could be really self-supporting. But very few women are capable of realising their full economic value. The character and traditions of women have been evolved during long periods in which they have worked for use and not for profit—for home and children rather than for wages and earnings. So far, however, it seems as if the development of the average woman's career is orderly enough. She is normally provided for by marriage, let us say, for twenty or thirty years. But marriage is not a lifelong provision for the average woman, it is only a provision for the best years of life, those years, in fact, in which a woman is ordinarily most capable of taking care of herself. The husband is, in many cases, swept off in middle life, and in the industrial classes he has usually not had very much chance of saving a competence for his widow. A certain proportion of women, therefore, we cannot say exactly how many, are forced to re-enter the labour market by widowhood or by other economic causes—illness of the husband, desertion, and so on. Once more the woman appears in the industrial arena, with all the disadvantage of a long period of intermitted employment and loss of industrial experience. Having lost the habit of industrial work, having very usually children to look after and a home to mind, she has to compete with girls and young women for wages based on the standard of life of a single unencumbered woman. The peculiar anomaly of the woman-worker's career is that she starts at 14 or 15 in a world of profit-making and competitive industry, leaves it, and comes back to it again after the lapse of twenty-five years or so. It may be that the inferior technical skill often attributed to women as compared with men is largely due to this fact, that while a man gives his best years to his industrial work, a woman gives precisely those years to other work, and therefore returns to industry under a considerable handicap. We can hardly doubt that this is a chief cause of pauperism.[5]

There can be little doubt that the children of women so circumstanced suffer in malnutrition and neglect, and there seems some reason to suppose that the inmates of industrial schools and reformatories are largely recruited from this class. The Departmental Committee on Prisons, 1895, gave particulars concerning 100 male prisoners, aged 16 to 18, in Wandsworth Prison in a certain week in the year 1894. Thirty-two per cent. had lost one or both parents. Dr. Morrison shows that of children in industrial schools 20 per cent. are fatherless; 15 per cent. motherless; 4 per cent. orphans.[6] But we have no statistics to tell us if this is an abnormal proportion. The problem undoubtedly exists, but we do not know its extent, to determine which we should need at least full statistics of the number of widows occupied, and the number of orphans dependent on their mothers' earnings.

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[5] See a tract published by the Charity Organisation Society. "We must "look the poor woman's troubles in the face. . . . She has to do the work "of two people; she has to be the bread-winner and go out to work, and she "must also be the housekeeper. She has to wash, clean, and cook, make and "mend clothes, care for and train her children. Can one pair of hands manage "all this? And, secondly, when she goes out to work our poor widow will "probably only earn low wages . . . about 10*s.* a week, and she will "certainly not be able to support herself and her family on that."—*How to Help Widows*, by A. M. Humphrey, p. 1. "Out of over 231,000 children "receiving poor relief, 93,000 are returned as being the children of able-bodied "widows relieved."—Local Government Board's Report for 1906-07.

The occupations mainly pursued by married or widowed women of 45 and upwards do not differ widely from those of women in general, as far as the census shows, but a larger proportion appear to be doing work of a laborious nature. Thus of over 208,000 married or widowed women occupied, aged 45 to 55, 25,000 are charwomen, and 28,500 laundresses; about one-fourth together.

At this point of my paper, I am strongly reminded that students of the London School of Economics used to be and doubtless at the present also are instructed that no subject in economics can be entirely separated from the other branches, but that all together form a circle, the parts of which are interdependent and cannot be isolated. The subject of women's life and employment is inseparably connected with the life of men, and the question occurs whether it is necessary so large a proportion of women should be widows at all. There is an excellent saying, that "we can have as many paupers as we like to pay for." It has an intimate bearing on the toleration of preventible diseases and accidents as well as on administrative laxity in the Poor Law. Considering that the comparative mortality figure for the general labourer is more than double that of occupied males generally,[7] not to mention many other occupations which have a deplorably high death rate, it would seem that there is still a good deal to be done in improving the conditions of those workers who are not under the Factory Acts or protected by any effective organisation. The protection of women by factory regulation has gone on the lines of protecting the individual woman worker at her work. Surely protection is also needed for the woman at home who sees her husband go off daily to some dangerous trade, where for want of the necessary technical means for the prevention of disease or accident he may be killed, maimed, or incur disease, and she and her children be left desolate.

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[6] *Juvenile Offenders.* By W. D. Morrison, p. 145.

[7] It is true the Registrar-General ascribes some of this high mortality to confused returns, but even if some allowance, say 25 per cent., be made on this ground, the excess is still great. Whilst correcting these proofs, I receive a pamphlet from Mr. Brockelbank, which shows that in 1907 one shunter in thirteen was killed or injured at his work on the railway. The same writer gives reasons for supposing that the published returns of fatal accidents to railway servants fall far short of the truth, only those accidents which cause death within twenty-four hours being reported as fatal.

It is notorious that a great deal of industrial disease and many accidents are due to causes largely preventible and within control. A very interesting report was issued last year in regard to dangers in building operations, which affect a large number of men, over a million. The report states that labourers are the principal sufferers from accidents, and have the most dangerous part of the work to do. One trade union secretary stated that 9 per cent. of his members had accidents in 1905; in eleven years on this scale each member would have an accident. Another union official said that a large number of accidents were preventible, and asked for more Government inspection. An employer stated that accidents were, in his belief, largely due to the lack of competent foremen and skilled supervision; he had only had three accidents in thirty years' experience, and attributed this immunity to his engagement of a really competent man. He thought the building trade got into bad odour with the public owing to the tendency to save in wages and put incompetent men to work that needs really expert supervision. Another witness complained that accidents were caused by putting unskilled men to skilled work for the sake of cheapness.[8] Evidence of this kind is, no doubt, a kind of sample of what is going on in many industries, if not all, and in regard to conditions of health as well as accidents.

Dr. Young stated before the Physical Deterioration Committee that factories contributed to the spread of phthisis, and that he considered that while a great deal had been done to combat the special dangers and diseases incidental to special trades, in general industrial conditions a great deal remained to be done, and legislative interference had by no means reached its limit. From the Registrar-General's Report we find that very high rates of phthisis occur among men in early manhood and middle life. In 1891-1900 of the total deaths among men, 25 to 35, nearly one-half were due to phthisis and respiratory diseases. The comparative mortality figure for certain occupations in 1900-02 was as follows:—

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[8] The above was written without knowledge or expectation of the very interesting Building and Engineering Works Bill introduced by Mr. Herbert Samuel on 1st March, 1909.

	Phthisis.	Other Respiratory Diseases.
All occupied males	175	78
All occupied males in agricultural districts	125	38
Tin miners	838	653
General labourers	567	268
General labourers (industrial districts)	450	171
File makers	375	173
Lead miners	317	187
Dock labourers	291	161

It is in the light of such figures as these, it seems to me, that we have to study the problem of married or widowed women's work and the pauperism of able-bodied widows and their children.

But although the census figures are confused by the combination of married with widowed women occupied, it is still possible to trace some relation between the curves of the male death-rate and the employment of married or widowed women. The relation is not a simple one, but it is sometimes very interesting. It would not be fair, for instance, to assume that the high percentage of married or widowed women aged 45 and upwards working in Blackburn is due to the high male death-rate. It *may* be partly due to it, but as we know there are an enormous proportion of women of all ages and conditions working at Blackburn, we have no right to assume widowhood as a special cause. But take Liverpool, where only 14·5 of married or widowed women are returned as occupied. From 45 to 65, over 20 per cent. are returned occupied, considerably above the average of Lancashire or the average of England. The male death-rate of Liverpool is considerably above the average of the Lancashire towns, few of which have a very good record. At Liverpool, it has often been observed, industrial work for women is not so much the custom or "the fashion," so to speak, as it is in other Lancashire towns. Yet we find at the age group 45 to 54, an unusual proportion of married or widowed women occupied. I think it legitimate to infer that the increase of employment at this age is related to the high proportion of male deaths. This subject seems to me worth some investigation, but unfortunately the figures cannot be obtained for any but large and often discrepant areas, so that no satisfactory table can be constructed.

In concluding this section, it seems appropriate to show the proportion of women who are living on their own means. Here the married or widowed women occupy a distinctly unfavourable position relatively to the single, a condition to be accounted for by the greater frequency of marriage among the less well-to-do classes.

Number of women returned as living on own means, with the proportion who are single, and married or widowed.

Ages.	Single.			Married or Widowed.		
	Total.	Living on Own Means.	Per Cent.	Total.	Living on Own Means.	Per Cent.
45—	205,176	29,532	14·4	1,300,806	29,179	2·2
55—	121,038	28,530	23·5	914,267	51,387	5·6
65—	66,513	21,810	32·1	531.615	65,227	12·3
75—	28,822	12,143	42·1	229,721	46,165	20·1

The Factory Department statistics of occupation.

The statistics issued from time to time by the Factory Department are collected on a totally different basis from the census, are classified differently, and are very difficult to compare. The Department takes cognisance of employees in factories and workshops only. Home workers, domestic workers, shop workers, and all employers are left out. Miss Anderson's return in the report for 1907 shows over a million and a quarter women and female young persons and children employed: 502,000 in textile factories, 476,000 in non-textile, 309,000 in workshops, amounting altogether to 10 per cent. of the female population over 10, or 31 per cent. of all occupied. The difference between these figures and the census is rather remarkable, even when the necessary allowances have been made. The home workers and employers in textile industries can hardly amount to more than a few thousands, and the difference between the half million recorded by the Factory Department and the 660,000 of the census, must be explained, I suppose, as due in great part to the difference between the workers who follow an industry, and the numbers in actual employment at any given moment.

Lancashire.

In any study of women's life and employment in this country, a prominent place must be given to Lancashire, where manufacturing industry claims so large a share in the energy of women and children. The next table shows the female population over 10 occupied, in age groups, and classified according to condition, whether single, or married, or widowed. If we compare these percentages with those for England and Wales generally, we are struck at once by the high proportions of girls and young women employed. From 25 onwards the urgency of demand for this special class of labour seems to slacken off, and the proportion of elderly and old women employed is not much above the figure for England and Wales.

Percentage of women in Lancashire who are occupied.

Ages.	Single.			Married or Widowed.			Total.		
	Total.	Occupied.	Per Cent.	Total.	Occupied.	Per Cent.	Total.	Occupied.	Per Cent.
10—	180,785	21,893	12·1	—	—	—	180,785	21,893	12·1
14—	45,027	26,321	58·5	—	—	—	45,017	26,321	58·5
15—	225,511	175,352	77·8	3,384	801	26·6	228,895	176,153	76·0
20—	173,705	140,070	80·6	54,179	14,669	27·1	237,884	154,539	64·9
25—	131,436	101,545	77·3	261,354	47,816	18·3	392,790	149,361	38·0
35—	51,116	36,969	72·3	236,499	42,987	18·2	287,615	79,956	27·8
45—	25,189	16,371	65·0	179,085	31,682	17·7	204,274	48,053	23·5
55—	13,506	6,773	50·2	117,492	20,156	17·2	130,998	26,929	20·6
65—	6,388	1,864	29·2	57,452	7,569	13·2	63,840	9,433	14·8
75—	2,016	242	12·0	18,132	1,211	6·7	20,148	1,453	7·2
All ages ...	854,669	527,400	61·7	937,577	166,691	17·8	1,792,246	694,091	38·7

The comparison is still more remarkable if we remember that in England and Wales the proportion of girls employed in domestic service is more than a third of the total occupied, but in Lancashire it is less than one-fifth.

Girls Aged	England and Wales.			Lancashire.		
	Total Occupied.	Domestic Servants.	Per Cent.	Total Occupied.	Domestic Servants.	Per Cent.
15—20	1,079,424	385,613	35·7	176,153	28,391	16·1
20—25	928,474	336,869	36·3	154,539	29,776	19·3

44 per cent. of all women and girls occupied are in the great textile industries, 12·6 in the making of clothes and dress.

The extraordinary demands made upon young workers in Lancashire for its predominant industry result in figures the full significance of which it is difficult to put into any words. Take a town like Blackburn; of girls 10—15 40 per cent. are occupied, nearly all of these being in textiles. As children under the Factory Act may not be employed until 12, this must mean that of girls 12 to 15 the much greater number must be in the mills. A great majority of the female population of these towns spend their early impressible years in this occupation. Then of girls 15—25 89·5 are occupied, the proportion in making clothes and dresses and in domestic service is only 12 per cent. of population, almost all the others are in the mills. Take Burnley: 40 per cent. girls under 15 are occupied, nearly all in textiles. Of girls 15—25 88 per cent. are occupied, and of these the proportion in domestic service and dress is again small; in other occupations absolutely negligible. The factory inspectors continually record the eagerness of employers to secure the services of young workers. In the latest Report (p. 86) the inspector at Rochdale says that the woollen manufacturers have found it impossible to get the numbers of young persons they want, and "it has been found necessary to employ men as piecers on woollen "mules in place of young persons or children." One of the lady inspectors, in a letter to me, says that the employment of young girls on women's work is increasing both in textile and non-textile work. The speeding up of machinery makes the strain of the full factory day of ten hours too much even for adults; what is it, then, for girls aged 14 to 18 who are legally able to work the full working day, and how are they under these conditions to get the training for the duties of life other than machine-minding?

Employment of married women in Lancashire.

23·5 per cent. of all occupied in textiles are married or widowed women, and 7·9 of all married or widowed women in Lancashire are occupied in textiles. This circumstance is very generally held to be associated with the high rate of infant mortality in Lancashire, and no doubt is, in some degree, responsible for it. But it is difficult to assume that the whole, or even most of the excess mortality of infants in Lancashire, is due to this one cause. The statistics of Lancashire strongly suggest that the high rate of infant mortality is only a part of the general high rate of mortality, and that possibly the conditions of housing and conditions of employment are to blame more than the one fact of married women's employment. The infant mortality of Liverpool is even higher than the infant mortality of Preston, and generally higher than Blackburn, but the proportion of married women occupied is not nearly so large, Liverpool not being a textile town. The table on next page shows that the death-rate, not only of infants, but of males and females at all ages is high, and indicates the presence of a considerable amount of preventible disease.

A large part of this excess mortality in Lancashire is made up of deaths from phthisis and respiratory diseases, which assume alarming proportions in this county. These are now considered to be diseases largely preventible, and traceable to unhealthy conditions in houses and work places. The following table shows the mortality of children under 5, arranged under a few of the principal heads.

Deaths of children per million living, under 5, *in Lancashire and England and Wales,* 1891-1900.

	All Causes.	Measles.	Diphtheria.	Whooping Cough.	Diarrhœal Diseases.	Tuberculous Diseases.	Respiratory Diseases.
Lancashire	73,432	4,642	1,122	3,812	8,271	4,894	16,309
England and Wales	57,736	3,247	1,362	3,068	5,485	3,930	12,328

The main disease of children caused by maternal industrial work and consequent neglect of children is usually supposed to be the class of diarrhœal diseases, which result from improper feeding, especially in hot weather; but, according to this table, we see that a very much larger proportion in Lancashire is due to respiratory diseases. The following figures are noteworthy :—

Deaths of children per million living under 5.

	All Causes.	Measles.	Diphtheria	Whooping Cough.	Diarrhœal Diseases.	Tuberculous Diseases.	Respiratory Diseases.
Liverpool	114,565	5,848	1,130	6,506	12,535	6,192	26,902
Salford	91,927	7,359	1,777	5,308	12,015	7,754	18,070
Manchester	99,466	8,427	1,074	5,704	12,957	5,950	21,906
Oldham	74,170	5,681	1,043	3,944	5,094	4,659	19,869
Burnley	77,245	4,577	1,549	3,440	7,961	4,240	19,376
Blackburn	73,591	5,762	1,115	3,499	8,106	5,107	16,813
Preston	84,469	5,613	936	3,604	13,493	5,254	16,650

Table showing death-rates of males and females in age-groups, for Lancashire, compared with England and Wales, 1891-1900.*

MALES.

	All Ages.	—1 Year.	0—	5—	10—	15—
Lancashire	22·52	195	79·39	5·31	2·89	4·41
England and Wales	19·32	168	62·71	4·31	2·45	3·79

	20—	25—	35—	45—	55—	65—
Lancashire	5·57	7·79	14·88	25·49	46·66	91·62
England and Wales	5·06	6·76	11·50	18·95	34·95	70·39

FEMALES.

	All Ages.	—1 Year.	0—	5—	10—	15—
Lancashire	19·81	163	67·56	5·25	2·81	3·95
England and Wales	17·14	138	52·80	4·37	2·57	3·67

	20—	25—	35—	45—	55—	65—
Lancashire	5·04	7·29	12·40	19·81	38·99	79·43
England and Wales	4·46	6·08	9·59	14·74	28·44	60·72

* In 1907 death-rates had fallen, but Lancashire is still ahead.

Death-rate of males.

	All Ages.	0—	5—	10—	15—	20—
Lancashire	19·9	55·9	3·8	2·2	3·3	4·2
England and Wales	16·0	44·8	3·3	1·9	2·9	3·8

	25—	35—	45—	55—	65—
Lancashire	6·1	11·3	22·1	45·9	94·1
England and Wales	5·6	9·5	16·9	33·7	70·5

Death-rate of females.

	All Ages.	0—	5—	10—	15—	20—
Lancashire	17·8	46·7	4·0	2·3	3·0	3·5
England and Wales	14·1	37·0	3·4	2·0	2·7	3·2

	25—	35—	45—	55—	65—
Lancashire	5·4	9·6	17·3	35·0	80·2
England and Wales	4·6	7·8	13·1	26·0	59·7

This table is taken from p. 16 of the Registrar-General's Report. The death-rate "all ages" is a "corrected" one, and slightly above the crude rate for Lancashire, which is: males, 18·1; females, 15·9. The corrected death-rate is higher for Lancashire than for any other county in England. The crude death-rate is higher in Durham for females, and in the North Riding both for males and females, than in Lancashire. *Cf.* p. 14 of the same Report.

We can see from these figures that the cotton towns, bad as is their record, are "out-Heroded" (to use the expression in a very literal sense) by Liverpool, where comparatively few young married women work.[9]

In regard to the high death-rate of Lancashire, it is to be noted that the proportion of widows at every age is higher than in England and Wales.

Ages.	Total Women.	Married.	Per Cent.	Widowed.	Per Cent.	Percentage Married or Widowed who are Occupied.
ENGLAND AND WALES.						
15—	1,638,621	25,392	1·6	91	—	11·9
20—	1,648,278	447,885	27·2	3,838	0·2	10·9
25—	2,769,886	1,781,022	64·3	47,703	1·3	10·0
35—	2,064,062	1,549,643	75·1	131,951	6·4	13·1
45—	1,505,982	1,061,938	70·5	238,868	15·8	16·0
55—	1,035,305	589,380	56·9	324,887	31·4	17·5
65—	598,138	220,292	36·8	311,333	52·1	14·4
75—	258,543	41,985	16·2	187,736	72·6	7·2
						13·2
LANCASHIRE.						
15—	228,895	3,369	1·4	15	0·0	24·4
20—	237,884	63,608	26·7	571	0·3	25·2
25—	392,790	253,535	64·5	7,819	2·0	19·2
35—	287,615	214,324	74·5	22,175	7·7	16·5
45—	204,274	138,820	68·0	40,265	19·7	14·9
55—	130,998	67,933	51·9	49,559	37·8	14·7
65—	63,840	19,137	30·0	38,315	60·0	11·9
75—	20,148	2,410	12·0	15,722	78·0	6·7
						16·7

Domestic servants.

In regard to domestic servants we discover that 1,285,000 women and girls over 10 are returned as indoor servants. Nearly 20,000 are under 14, nearly 64,000 are under 15, and the industry thus employs quite as many children as does the textile trade. The largest age group of servants is that of 15 to 20 years old, which includes 385,600 servants. Nearly 35 per cent. of all servants, therefore, are under 20. As we are supposed to suffer from a scarcity of servants in this country, it is interesting to note that the German Empire includes fewer servants, viz., only 1,130,000, and, of course, a much larger population, viz., 56,000,000. Our so-called scarcity of servants arises, I think, from the intensity of demand created by our large wealthy and luxurious class. A curious point arises in comparing the percentage of servants in the rural and urban districts.

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[9] See subsequent Discussion for qualification of this statement.

Urban Districts.			Rural Districts.		
Female Population Over 10.	Female Domestic In-door Servants.	Per Cent. of Female Population.	Female Population Over 10.	Female Domestic In-door Servants.	Per Cent. of Female Population.
10,279,559	951,968	9·3	2,910,026	333,104	11·4

The larger proportion of servants in the rural districts is, perhaps, an indication that the country is becoming more or less sub-urbanised, and the reflection occurs that the lower infant mortality of the country may be due in part, not only to better air, but to greater relative wealth. For instance, Rutland, noted for a low rate of infant mortality, includes 16·6 domestic servants to every 100 female persons over 10, Dorsetshire 12·3, whereas the proportion is only 10·1 for England and Wales generally, and considerably less for the Lancashire towns, and others notorious for high infant mortality. The lowest proportion of servants is found in mining and manufacturing districts and the highest in fashionable suburbs, health resorts and the residential districts in the country near London. I have not, however, thought it necessary to work out this subject at great length, as it has been most ably handled by Miss Collet some years ago, and there does not appear to be any special new feature.

Care of children.

It has seemed to me that it would be very useful and interesting if we could form an estimate of the number of women occupied in the care of children, but I find it impossible to suggest any means of doing so. We do not even know how many women are mothers of children. It is somewhat curious that the census, which records the figures relating to marriage with a good deal of care, takes no account of the at least equally important relation of parentage. We know the number of women who have children in any one year, but not how many altogether have living children under 10 or under 15. There are over 5,250,000 married or widowed women between 15 and 55 and nearly 7,250,000 children. The percentage works out roughly at about 1·4 children to each woman, but this tells us very little, as a large but unknown number of these women are childless. It would be much more significant if we knew the proportion of children to the actual existing mothers. There are also the women engaged in teaching, who number in the census 172,875, rather more than 4 per cent. of all engaged in occupations. About four times as many women are employed in textile alone as in teaching. Some proportion of domestic servants are, no doubt, employed in either the direct or indirect care of children, but not, I think, a very large one, for it is well known that the largest proportions of domestic servants are found in districts like Kensington, Hampstead, Bournemouth, and pleasure resorts or residential districts generally, where the birth-rate is extremely low, and the proportion of children also low. On the other hand, districts such as West Ham and others teem with children, and have very few domestic servants in proportion.

I have not thought it necessary to make a table of the proportion of servants to children under 10, for these facts are so well-known that it is unnecessary to labour them. Whatever domestic servants are doing they are not tending any very large proportion of the rising generation, of the young people who will do the thinking and the work, vote at elections and govern the country in thirty years' time. But if we could add together the number of mothers, say, under 50, an estimated proportion of domestic servants, and the number of teachers, in different districts, we could form a rough estimate of the number engaged directly or indirectly in the care of children, and it would be interesting to see how the proportion of such women compared with the proportion of children under 10 or 12 in each district. Recent reports on the health and nutrition of children in various poor districts have led to the obvious conclusion that many poor women are ignorant, and need to be taught their duty, which is possibly true enough as far as it goes. It has to be remembered, however, that the burden of work on poor women in cooking, cleaning, washing, having children and tending them, keeping house and sometimes doing industrial work also is very great. It suggests the question whether there really are enough women employed in the care of the children existing at any given moment? It would be interesting to know approximately the number of women occupied as mothers, nurses and teachers per 100 children in some given healthy district, and it might even be possible to arrive at a rough estimate of the minimum proportion necessary. In districts where a very large proportion of women are industrially employed it seems likely that that minimum is not reached.

Pauperism.

Female pauperism shows, on the whole, a tendency to decrease in proportion to population. It has also decreased since 1877, and since 1902, in proportion to total pauperism, though since 1905 there has been a slight increase.

Return for 1st January,	Percentage of Pauperism.			Rate per 1,000 Estimated Population of Each Class.		
	Men.	Women.	Children —16.	Men.	Women.	Children —16.
1877	20·9	44·4	34·7	19·5	38·1	25·0
'82	21·4	41·9	36·7	20·5	36·7	26·8
'87	22·8	41·1	36·1	20·8	34·4	25·9
'92	23·5	42·9	33·6	18·3	30·4	21·0
'97	25·2	43·5	31·3	19·7	30·9	20·9
1902	25·5	44·7	29·8	17·9	28·4	18·9
'03	25·9	44·3	29·8	18·4	28·6	19·2
'04	26·3	44·0	29·7	19·0	28·7	19·4
'05	26·7	42·7	30·6	20·5	29·7	21·3
'06	27·2	42·9	29·9	20·5	29·3	20·4
'07	27·7	43·2	29·1	20·5	28·9	19·5
'08	27·6	43·0	29·4	20·3	28·6	19·5

Statement for the 1st January, 1908, p. xix.

A table printed in the Statement for 1st January, 1906, shows the female paupers classified as able and not able-bodied, which brings out more clearly the fact that in regard to pauperism women's position is tending to improve relatively to that of men.

Rate per 1,000 estimated adult male and female population.

1st January,	Able-bodied.			Not able-bodied.		
	Men.	Women.	Total.	Men.	Women.	Total.
1877	2·9	9·2	6·2	16·6	28·9	23·0
'82	3·4	9·6	6·6	17·0	27·2	22·3
'87	3·9	8·8	6·4	16·9	25·6	21·4
'92	3·4	7·3	5·4	14·9	23·1	19·2
'97	3·8	7·0	5·5	15·9	23·9	20·1
1902	3·2	6·1	4·7	14·7	22·3	18·7
'03	3·5	6·2	4·9	14·9	22·3	18·8
'04	3·8	6·3	5·2	15·1	22·4	18·9
'05	4·8	7·0	6·0	15·7	22·7	19·3
'06	4·6	6·6	5·7	15·9	22·6	19·4

It is well-known, however, that the term able-bodied includes persons suffering from sickness or temporary disability. A table in the return for 1908 shows that an increasing proportion of indoor relief granted to women is on account of sickness.

Ordinarily able-bodied women, classified as sick and in health, receiving indoor relief on 1st January.

	Number.		Per Cent. of Total Women Receiving Indoor Relief.	
	Sick.	In Health.	Sick.	In Health.
1891	5,873	8,213	9·5	13·3
'92	8,147	7,837	13·2	12·7
'93	7,972	8,554	12·6	13·5
'94	8,335	9,662	12·5	14·5
'95	8,731	9,681	13·0	14·4
'96	9,008	9,754	13·3	14·4
'97	8,951	9,626	13·1	14·1
'98	9,555	9,568	13·7	13·7
'99	9,917	8,659	14·1	12·3
1900	9,332	8,579	13·2	12·1
'01	9,790	8,310	13·8	11·7
'02	10,662	7,965	14·5	10·9
'03	11,088	8,393	14·7	11·2
'04	12,086	8,663	15·6	11·2
'05	12,971	9,158	16·2	11·4
'06	12,849	9,232	15·9	11·4
'07	13,193	8,797	16·1	10·7
'08	13,072	9,147	15·7	11·0

In 1907 a special return was compiled, designed to show how far pauperism is permanent or quasi-permanent, how far it is occasional and temporary; that is to say, the return was designed to be a complete summary of all persons who had directly or indirectly received relief in the course of the year. This return somewhat modifies the impression obtained from the ordinary one-day returns. Women are here still the largest class of paupers, but not so predominantly so. The men are 48 per 1,000 estimated male adult population; the women 51 per 1,000 estimated adult female population; the children 47 per 1,000 the estimated children. As compared with the day return we get the following:—

	Relieved in Course of Year.
For every 100 men relieved on one day	242
" women "	177
" children "	249

It thus appears that relief to adult females is of a more permanent character than relief either to adult males or to children. The women relieved were classified as follows:—

	Number.	Per Cent.
Heads of families	91,649	14·8
Dependents	174,357	28·2
Relieved singly	352,667	57·0
	618,673	100·0

The memorandum to this return estimates that about 48 per cent. of the total paupers consist of widows, deserted and all other women, with their children.

Another interesting feature about this special return is that under this system of recording paupers by the year instead of by the day, both in London and in Lancashire, the number of women receiving relief is actually smaller than the number of men.

I think we may take these figures on the whole as indicating that improved education and opportunity are rendering women more independent and self-reliant than formerly. As regards deaths in Poor Law institutions and hospitals women are in the minority :—

Deaths, 1906, *England and Wales.*

	Males.	Females.	Females per 100 Males.
In workhouses	30,382	20,974	69
,, hospitals	20,623	14,537	70

Crime.

In regard to crime women take a small place relatively to men.[10]

	Indictable Offences.			Other Offences, treated Summarily.		
	Males.	Females.	Females per 100 Males.	Males.	Females.	Females per 100 Males.
All ages	31,698	6,658	21	198,447	56,489	28
Under 21	12,772	1,785	14	17,286	1,909	11

I extract also the following from the Judicial Statistics :—

	Indictable Offences.		
	Males.	Females.	Females per 100 Males.
Criminals at large	3,373	753	22
Convicted prisoners	139,428	44,298	32
Sent to penal servitude	1,005	33	3
Imprisoned	138,384	44,261	32
,, with hard labour	98,981	22,507	23
Criminal lunatics	728	227	31
In inebriate reformatories	110	294	267
Drunkenness	11,420	4,494	39
,, with aggravations	32,003	17,080	53

According to the census 1901 there were in prison :—

	11,636	2,844	24

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[10] Mr. Belfort Bax will, perhaps, remark that this only means that they are treated with undue lenience.

Defectives.

The numbers of persons in 1901 returned as suffering from physical infirmities and defects were as follows:—

United Kingdom.

	Males.	Females.	Females per 100 Males.
Blind ...	16,935	15,888	94
Deaf and Dumb ...	11,852	10,003	84
Mentally deranged ...	84,936	93,059	110
Inmates of lunatic asylums (England and Wales) ...	38,688	46,030	119

It is somewhat curious that the number of mentally-deranged women exceeds the number of mentally-deranged men, and the number of female inmates of lunatic asylums exceeds the number of males, yet the deaths of women in lunatic asylums fall short of the deaths of men.

Deaths in Lunatic Asylums.

	Males.	Females.	Females per 100 Males.
1906 ...	5,272	4,848	92
'07 ...	5,394	5,147	95

According to the General Report of the Census of 1891 the greater number of female lunatics does not mean that women are more liable to the affliction of insanity than are men, but that the death-rate and also the percentage of recoveries are both lower among women than among men. Congenital idiocy is stated in that report to be more frequent among boys than among girls; but the discharge rate due to death or recovery is also higher, and the excess number of female lunatics is due to longer survival. The report estimates the occurrence of lunacy as nearly 5 per cent. more common in the male than in the female sex.

The unbalanced or degenerate.

I have also collected a few figures as to deaths from diseases that indicate mental and physical instability. A majority of male deaths appears in almost every case, but we have no information to tell us whether women are less prone to those diseases or merely less likely to die if they get them. The total death-rate and the death-rate from old age are added for comparison.

Death-rate per million living, England and Wales, 1907.

	Males.	Females.
All causes	15,952	14,113
Old age	823	1,049
Diseases, nervous system	861	673
Alcoholism	79	48
Cirrhosis of liver	123	101
Meningitis and inflammation of brain	171	141
Softening of brain	69	62
General paralysis of insane	105	31
Insanity (not puerperal)		69
Epilepsy	86	74
Suicide	156	50

As it is sometimes asserted that female alcoholism is increasing I have extracted the figures for twenty years. The increase may be partly attributable to better reporting, partly to the South African war, and there has been a recent decrease. The figures for suicide show some increase.

Female death-rate per 1,000,000 *living.*

	Alcoholism.	Cirrhosis of Liver.	Suicide.
1887–90	40	102	38
'91–95	50	103	44
'95–1900	67	116	44
1901–05	63	105	48
1906	53	98	45
'07	48	101	50

The highest recorded death-rate of women from alcoholism was 95 in 1900, from cirrhosis of the liver 127 in the same year, from suicide 51 in 1903.

Nomadic persons.

The tramp instinct must be inherited equally by the sons and daughters of tramps, but it appears to develop much less strongly in women than in men or else it is more peremptorily stifled by custom and tradition.

Census, 1901.	Males.	Females.	Females per 100 Males.
Persons sleeping in barns and sheds	1,317	328	25
In caravans or open air	6,858	5,716	83
Casual paupers 1st January, 1906	8,658	876	10

On Friday, 8th February, 1907, a census was taken of homeless persons in London. The London County Council's officers counted:—

Men.	Women.	Women per 1,000 Men.
1,998	402	20

Conclusion.

The statistics here brought together show, first and most plainly of all, that women in this country are more numerous than men; and that, for various reasons, they cannot all be maintained by men, even if it were theoretically desirable that they should be so maintained. It follows, then, that economic self-dependence is, in a great many cases, a necessity. Unfortunately, the available statistics do not enable us to judge of the extent to which this is true; for, even if the occupation returns be taken at their face value, we do not know how many of the women returned as occupied are partly maintained by relations. On the other hand, not all married women are maintained by their husbands; there is certainly a minority who, through the illness, desertion, or incapacity of the husband, are thrown on their own resources.[11] We do not know how many of the married or widowed women returned as occupied are working for supplementary earnings, how many are virtual heads of families, with children dependent on them for support. It is difficult to imagine any system of census return which could entirely clear up this complicated subject, but it would certainly be a considerable aid if the married or widowed occupied were distinguished, as in the German census, and if we could have a return of parentage in relation to children, say under 15.

The points that have impressed me most in making this slight and imperfect investigation are the high proportion of women to men, the low death-rate of women, and further, the fact that normally working-women seem to pass from one plane of social development to another, not once only, but sometimes twice or thrice in their lives. We might distinguish these planes as status and contract, or value-in-use and value-in-exchange. All children, for instance, are born into a world of value-in-use; they are not, for some years at all events, valued at what their services will fetch in the market. At an age varying somewhere between 8 and 18 or 20 the working girl, like the boy, starts on an excursion into the world of competition and exchange; she sells her work for what it will fetch. This stage, the stage of the cash nexus, lasts the majority of girls a few years only. If she marries and leaves work, she returns at once to the world of value-in-use; the work she does for husband, home, and children is not paid at so much per unit, but is done for its own sake. This accounts for twenty years or so; then she, or some unknown proportion of her, is again forced into competitive industry on widowhood. This is what Madame Gnauck calls the "cleft" (*Spalte*) in the woman's industrial career. It is not surprising that, under these circumstances, the working woman's economic position is singularly weak, and though her more temperate and orderly life make her less criminal than man, she is more liable to come upon the rates. Woman's physical strength is unquestionably less than man's, but her reason is less frequently deranged. She appears, as far as statistics can tell us, to have a greater stability of nerves, a greater power of resistance to disease, and a stronger hold on life altogether.

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[11] The minority of the Poor Law Commission have evidently been painfully impressed by the extent to which married women's work is induced by the under-employment and casual labour of men, and the bad habits into which many men fall under these conditions. See "Minority Report," part 2, p. 213: Longmans.

It is asserted, or assumed, that the lower death-rate of women is due to their more favoured and protected position; but it is also asserted, or assumed, that women are protected and favoured because they are weaker than men and unable to do such hard work. This raises an interesting question which has been inimitably put by Professor Edgeworth in *Mathematical Psychics.*[12] "When Fanny Kemble "visited her husband's slave plantations she found that equal tasks "were imposed on the men and women, the women accordingly, in "consequence of their weakness, suffering much more fatigue. Sup"posing the [employer] to insist on a certain quantity of work being "done, and to leave the distribution of the burden to the philanthropist, "what would be the most beneficent arrangement, that the men "should have the *same fatigue*, or not only *more task*, but more *fatigue?*"

Women ostensibly have in industry a less task, but it would be difficult to prove that they have less fatigue. Women often work longer hours even under the Factory Act than most men do under their trade union; much of the work done by women in laundries, jam factories, sack factories and others, is exceedingly laborious. The dragging of heavy weights is a cause of constant remonstrance by the lady inspectors. The enormous amount of domestic work accomplished by women in their homes, without outside help, in addition to the bearing and caring for infants and young children, must be equal in output of energy to much more than all the industrial work of women, especially when the rough, inconvenient and inadequate nature of the appliances common in working-class homes is considered, and the still more painful fact is remembered that the very person responsible for all this work is *the* one of the family who, in case of need, is the first to go short of food. Taking these facts into consideration the lower death-rate of women seems to me inexplicable as being the result of privilege and protection. It is, however, a source of weakness, economically speaking, as it leaves a disproportionate number of women without a partner, often at the very time when owing to the care of young children they are least capable of self-support, and it increases the competition of women for employment.

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[12] Quoted in *Industrial Democracy*, S. and B. Webb, p. 505.

DISCUSSION *on* MISS B. L. HUTCHINS'S PAPER.

THE PRESIDENT, before calling on anyone to open the Discussion, said he would take the opportunity of adding some later figures to those given in this excellent Paper.

In several passages the author referred to the deficiencies in Government statistics—a subject which many in that room had frequently handled, and pointed out that the statistics of the Factory Department were on a different basis from those of the Census. She gave an explanation of the difference in figures, which he was inclined to doubt, and suggested that it was due in great part to the difference between the workers who followed an industry and the numbers in actual employment at any given moment. He did not think that could be the explanation; the discrepancy was so large that it must be accounted for by the other causes hinted at. If one looked at the Home Office returns in themselves, there was no single industry in which there was any reason to suppose that the numbers went up and down in the manner which would be necessary to account for the discrepancy. The discussion might perhaps show that the difference in the figures must be explained by the difference in the basis on which they were computed, and by the ordinary difficulties of getting occupation figures. The same question of the difference in statistics, and the difficulty of making exact comparisons, was also referred to in another passage. No doubt, it was true that the statistics of occupation had a large element of uncertainty, especially in the case of women—how absolutely true had been shown on two recent occasions in that room.

The figures he desired to put before the Meeting, as necessary to the discussion of the question, were those which concerned certain consequences of occupation amongst women, especially amongst married women. Some of the statistics were not worth dealing with, as belonging to a side issue, such as the figures of idiocy and lunacy. These must be regarded with the greatest caution, as they almost entirely depended on the question: Who paid for the maintenance of numbers of persons treated as lunatics or idiots? It was a question in large degree of computation, and no argument ought to be based on those figures. Others, which were material to the discussion, were not the latest which might be given. For instance, he referred especially to the table of infant mortality, in connection with which Miss Hutchins explained how the employment of mothers in certain classes of industry might affect infant mortality, a subject to which much attention was now being directed. She took her figures from the Census; but they were extremely stale, namely, from 1891 to 1900, and they did not tally very closely with the figures of the present day. Lancashire, for instance, still had a high rate of infant mortality, but argument could not rest on the same ground now as formerly, for the facts were modified during the present decade. The latest figures were those in the reports of the Medical Officers of Health for the various districts, where comparisons were made year by year, and in which they had the figures for 1908 already available. Taking the country as a whole, however, the latest figures were those for 1907. That year was an extremely exceptional one with regard to infant mortality, and that fact enabled them to trace home the probable causes, and especially the bearing of the occupations of women on infant mortality. In the Report of the Medical Officer of the Local Government Board, he pointed out an extraordinary fall in infant mortality all over the country in 1907, due entirely to a very low mortality in the third, or summer, quarter, when the mortality was generally at the highest point. That was a cool summer, and it affected the mortality all round. Miss Hutchins mentioned the pottery and textile districts as specially subject to infant mortality, and she picked out Lancashire as the county in which it was highest. But the figures of the Medical Officer to the Local Government Board did not show anything like the same results. In the town of Burnley, infant mortality had been always extremely high; but, next to Burnley, came the Potteries. Miss Hutchins's figures showed that "Liverpool," Preston, Manchester, Salford, Blackburn, and Burnley all had exceptionally high infant mortality. But, if they took the new figures of the Board, they found that in the last four years available, and taking the same towns in Lancashire, "Liverpool" was 165 per 1,000; Manchester the same, 165; Preston, a little higher, 171; Salford, a little lower, 161. Virtually they were all the same, but Burnley was 198. Then, if they took the Potteries towns, Burslem was 184, Fenton 175, Hanley 180, Longton 204, Tunstall 203. There was no complete district of any industry in the country which had an average infant mortality comparable to that in the Potteries district. Whatever might be the influence of the occupation of the mother on infant mortality, Lancashire could not be picked out as being in the worst position; for, undoubtedly, that was occupied by the Pottery district, with the one exception of Burnley.

Mr. JESSE ARGYLE, having expressed his great admiration for this Paper, which showed much research, and was excellently put together, said he had not yet had an opportunity of examining it with any thoroughness, but he would respectfully suggest that the references to sources of information might be given a little more fully. One of the chief things that struck him in this Paper was the very bad pre-eminence of Liverpool in the statistics of mortality. In one place it was stated that the male death-rate of Liverpool was considerably above the average of the Lancashire towns, few of which had a very good record. And, again, that the infant mortality of Liverpool was even higher than that of Preston, and generally higher than that of Blackburn. Again, under the table of deaths of children per million living under 5, it was stated that "the cotton towns, bad as is their record, are out-Heroded by Liverpool, where comparatively few young married women work." Now, having some little knowledge of the Lancashire towns mentioned, it struck him as extraordinary that Liverpool should compare so badly with the rest. He knew that the general record of Lancashire towns was rather bad, but saw no reason why Liverpool should be worse than the others. It occurred to him that probably the explanation lay in the area taken; and, on looking up the Census and the Registrar-General's decennial report, he found that to be the case. The fact was, that the Liverpool of the Registrar-General was only a little more than one-fifth of the real Liverpool—just the central part—and comprised about 150,000 people, while the total population of the city was 700,000. What had happened with regard to Liverpool was exactly what happened in most of the great towns; nearly everybody who was able to do so made haste to get out of the central district, and to live further out, and so they had a residuum left, which, in registration Liverpool, included the Scotland division, a large Irish colony of dock and waterside labourers, &c. They should at least add on West Derby and Toxteth Park; and, if they did that, the male death-rate dropped from 29 to 21 per 1,000, and the infantile mortality from about 114 to 79, and so did not compare badly with the other towns. Besides this, there was a great Liverpool across the water; many thousands had gone to the other side of the Mersey to live, and came in daily to their work. The death-rate amongst these was lower still, so that, if the figures could be fairly worked out, it would be found that Liverpool really had a lower death-rate than the other towns with which it had been so unfavourably contrasted. The same thing was largely true with regard to Manchester, which was put next in the table of infant mortality. The Manchester Registrar-General's area was less than one-fourth of the real city of Manchester. It might be said that similar reasoning should be applied to the other towns named; but that was not the case; it was just the reverse. In the cases of Blackpool, Oldham, Preston, and Burnley, the Registrar-General's area was much larger than that of the county borough, and, therefore, the outlying well-to-do districts were included. On p. 222, the author said it had often been observed that in Liverpool industrial work for women was not so much the custom or the fashion as in other Lancashire towns. That, he believed, was quite true; yet, added the author, "they found that in the age-group from 45 to 54, there was an unusual proportion of married women or widowed women occupied." That statement was for the city of Liverpool—the 700,000 population, not for the 150,000 of the Registrar-General's area; so that it lost its value as a comparative statement. Indeed, the comparisons made seemed to be generally vitiated by these differences in area. On p. 233 there was a reference to the large number of children of widows who were in receipt of poor relief; but it should be remembered that that was by no means the full tale of widows' children who were publicly supported, because they must add the many thousands of children in orphanages, a large proportion of whom were fatherless children, the mothers still living. He was much struck by the statement on p. 221, with regard to the protection of women by factory regulations having gone simply on the lines of protecting the individual woman, while it was equally necessary to protect her husband against accident and disease. There was much truth in that; and, having mixed a great deal amongst working men, he might say that, although something had been done recently by legislation, he hoped a good deal more would be possible. He also thought the suggestion that the Census should show the proportion of children to existing mothers was well worthy of the favourable consideration of the authorities.

Mrs. J. RAMSAY MACDONALD said this Paper showed a very happy combination of statistics and of the practical suggestions which might be drawn from them. With regard to the question of infantile mortality, she regretted the President did not refer to some more recent figures showing the death-rates in Durham and Northumberland. When discussing this question, with regard to the effect of the occupation of the mothers on the children, they were always reminded that amongst the most unhealthy counties they had to include such as Durham and Northumberland, where the percentage of wage-earning women was exceedingly small. But there were all sorts of other reasons for variations in infantile mortality which could not be put down simply to the occupations of the mothers. A very interesting point was one they had been discussing at the Women's Industrial Council, on which the Census gave no evidence—the number of women dependent on their own earnings. That was a very important matter with regard to any practical improvement they might try to make in the conditions of wage earners, and they had been trying to find out if in the forthcoming Census it might be possible to ascertain how many of these women were dependent on their own earnings. But they had not had very much encouragement from Sir Athelstane Baines and others to hope for information of any value. The author had brought out very well the importance of the question of widowhood, and its bearing on the question of women's occupations, showing how the widow who went back to work after a lapse of years, and when it was especially important to earn high wages, was handicapped in doing so. That must strike them all, because, in all attempts to improve women's condition, on the one hand you had the girl not particularly interested in her work, treating it as a "meanwhile" occupation, and on the other hand the widow burdened in all sorts of other ways. If she might introduce the question of suffrage, she would point out that a great many women were beginning to see that if they really wanted to keep their husbands alive, the best thing to do was to go in for politics, and get the protection of the law. They were getting more and more to see that amongst workers in collieries, railways, and many other industries, they had a great many unnecessary deaths, and that if they wanted to increase the male population they must do it by having more protective legislation for the men.

Again, many women were thinking that one of their chief interests in politics was to remove the burdens on widows who at present were forced into employment. She hoped one of the things which would result from the Minority Report of the Poor Law Commission would be to help forward the decision that, if a child lost its father, it did not follow that it should be taken away from the care of its mother, by forcing her to go out into some wage-earning occupation. Again, the Census was very unsatisfactory in the respect that they did not know how many widows had children of a young age, and there she hoped that the Society might bring some influence to bear in improving the returns. Miss Hutchins had pointed out how valuable it would be to get single women and widows classified together, if they could not get the three separated. She would suggest, however, that the term used—"unmarried," for the German "ehelos"—was not a very happy one; because, if a widow woman with children were described as "unmarried," it would carry with it an unfortunate suggestion. Possibly "without husband" would be better; at any rate, if such a distinction was to be introduced, it was desirable to express it as happily as possible.

Miss G. TUCKWELL said, with regard to the statement on p. 223 that there was a difference between the half-million textile workers recorded by the Factory Department and the 660,000 in the Census, she was informed by an expert that in the Census returns a large number of persons would return themselves as employed in cotton mills, but that, if their employment were clerical or non-manufacturing, they would not be included in the Factory Department returns, which only included persons actually employed in processes under the Factory Acts.

Sir ATHELSTANE BAINES said he would endeavour to answer some of the questions raised in connection with the Census. The inclusion under a special industry of occupations not restricted to that industry was not uncommon, and arose from insufficient detail being given in the schedule to allow of classification. Thus, timekeepers, clerks, or mechanics employed in a cotton factory might return themselves simply as "employed in cotton mill," instead of adding "cotton mill" to their special occupation, and they would thus be tabulated along with cotton *operatives*. Then, as to the separation of the widowed from the married, he agreed with the author, that from the economic standpoint the main distinction should be between those with husbands and those without that means of support, and this might be brought to the notice of the Census authorities. A far more important and difficult question was whether the Census could be trusted to yield a return of those partially supporting themselves by an occupation as distinguished from those who are entirely dependent upon it. The Census Committee of the Society had considered the point with some care, and felt bound not to recommend the attempt to record this distinction, because experience had shown that the return would be incomplete and misleading. A woman exercising a "genteel" or creditable occupation for merely pocket-money remuneration would return it without qualification, whilst in other cases the supplementary wage would be ignored, and the person enjoying it would be entered under the occupation of the head of the household, the latter being thus considerably exaggerated. Another point mentioned was the absence of statistical linking of the mothers with their offspring, and he would say that the Committee had suggested the addition of a column to the schedule from which a table might be compiled giving the number of children to the existing marriage correlated with the duration of the marriage and the age of the mother. Such a table was prepared in 1901 for the Australian States, and, by the use of separate abstraction, might be prepared here, though it would cost a little more money, which might be, or not, an obstacle at the present time.

Less directly connected with the Census was the question of the lower proportion of females in the country as compared with that in the towns, especially in later life. This might be due to the reversion to the village of men who had spent their working days in the town. The higher proportion of servants, too, in the country might be attributable less to "villadom" than to the number of young girls in training at farmers', and of those temporarily at home during intervals of service elsewhere. The excess of females in the population generally was exaggerated, of course, in 1901 by the absence of men in South Africa, but, apart from this, there seems a tendency for the proportion to increase. The excess of male births seems stationary, but the death-rate amongst infants and children under five seems to have fallen more in the case of girls than in that of the other sex. It is not only in England that the above tendency is apparent, but almost everywhere the proportion of women appears to be rising, and it would seem as though the women profited more in good times and succumbed less in times of distress than the other sex. He found much in the Paper of great interest and open to discussion, but it was only on the Census matters that he felt called upon to comment.

Miss CONSTANCE SMITH said that Mrs. Macdonald had already suggested a question which she wished to put; but she would follow it out a little further, in the hope that the President would give some answer to it. Her point was the remarkable infantile mortality in certain districts where the employment of married women was very small, for instance in Durham. It was an undoubted fact that in some of the second and third-class towns of the north, where the employment of women was not large, the infantile mortality was very high. Taking that, together with the interesting statement of the average for four years of the infantile mortality in the Potteries, she would like to ask whether they were to interpret those figures as being due to the nature of the trade carried on there, to the proportion of married women employed, or to the conditions of life in the Potteries, or to all three causes together? It had been suggested by those qualified to know that this remarkable rate of infant mortality in the northern towns, where married women's labour was not largely employed, was due in great measure to the housing conditions, to overcrowding both as regarded the rooms and the number of houses to the area, and that suggestion was borne out by the comparative figures taken in different districts of London, where the mortality varied in proportion to the overcrowding. It seemed desirable to apply that test to the infantile mortality in the Potteries, and to ask how far it should be attributed to employment, to the nature of the trade, or to the conditions, which in many of the Pottery towns were far from good.

With regard to the male death-rate, it occurred to her that it might have been made a little clearer in Miss Hutchins's Paper that a larger proportion of men than women were brought into contact with dangerous machinery and with other grave dangers connected with industrial work, and that this might account, to a certain extent, for their much higher death-rate at certain ages.

Mr. Argyle had rather cut the ground from under her feet with regard to Liverpool. But in relation to the interesting remark of Miss Hutchins, that in Liverpool there was little employment of married women at the younger ages, but a striking increase at the ages between 44 and 55, would not that, probably, be accounted for by the fact that the women who returned to work would be the widows of dock labourers, men whose lives were notoriously short and who were exposed to considerable dangers from accident?

Mr. NOEL A. HUMPHREYS said that it was to be regretted that the author, in discussing the subject of infantile mortality, had adopted the registration districts instead of the correct boundaries of Liverpool and of other towns, statistics for which are given in the reports of the Registrar-General, because this oversight, to a certain extent, vitiated the conclusions drawn from the ratio of infantile mortality in those towns. One other point he desired to refer to was with regard to what he considered a great and long-standing fallacy. There was in the Paper a reference to the efforts of Medical Officers of Health and women inspectors in the various towns to diminish the rate of infant mortality, and the author urged that some persons, by no means the least thoughtful, while regarding these efforts to preserve infant life as a moral duty, yet had some misgivings as to their ultimate effect; they feared that the weaklings might thus be preserved and the survival of the fittest checked. It was a very old, and he had hoped an exploded fallacy, that sanitary effort and improvement tended mainly to the survival of the weaklings, and was, therefore, only of doubtful advantage. He urged that it was surely beyond doubt that the sanitary labours of Medical Officers of Health and women inspectors did not only, or even mainly, lead to the survival of weaklings, but tended still more to prevent the child born healthy from becoming a weakling. Such was the beneficial effect of sanitary administration, and he regretted to see this old fallacy reproduced in this excellent Paper.

Miss CLEMENTINA BLACK said the Census figures of the marriage of women were always somewhat in error, because a larger number of women and a smaller proportion of men returned themselves as "married" than corresponded with the facts. That was brought to her notice very much when a friend of hers was taking the Census in a London hospital, when it was found among the women patients that practically all described themselves as "married," whereas in the male accident ward, which contained a large number of men from the poor industrial classes, a very small proportion described themselves as "married," although, in fact, probably the numbers were almost exactly equal in the two wards.

The PRESIDENT, in proposing a vote of thanks to Miss Hutchins, said the discussion illustrated some of the difficulties about which the Society had on one or two occasions been warned both by Mr. Bowley and himself. The case of "Liverpool" was one which he relied upon very largely in the first Address he gave on the subject.

It was difficult to work out the deaths, say, from potters' rot and lead poisoning, or from the special phthisis of any trade, for areas in the least resembling those of the particular employment; and enquirers were puzzled when they tried to deal even with great towns; since they found that Administrative Liverpool had nearly five times as many inhabitants as Registration Liverpool, and that entirely vitiated all arguments based on "Liverpool" as they knew it. Of course, those conflicts were also noticeable in all discussions where urban and rural districts were contrasted, because, while the metropolis, the great cities, the county boroughs, and the Royal boroughs of Scotland might be taken as being almost entirely urban, outside those they were in inextricable confusion, because the urban districts were very largely not urban in their character, and the rural districts were very largely urban. Many of the urban districts, although they had an intensely urban centre, had an enormous area of agricultural land around them. Those facts affected the statistics in this Paper and the arguments based upon them, and also the results of any investigations which might have been made previously.

As to infantile mortality, with regard to which he had given some later figures, he had made but a very partial investigation generally, but a very careful one in the Potteries, which was continued over many years. But outside the Potteries he found one or two cases where the mortality was extremely high. His conclusion he had based on the best evidence, which was that of the Medical Officers of Health for the various districts. He had read out the high figures for the Pottery towns, but besides those six towns there were five other districts which were not recognisable under Pottery names, and which could not be found in any official figures for the country, and he had to have recourse to the reports of the Medical Officers of the districts which contained particular wards. Having done that carefully, and received from the Medical Officers of from eleven to thirteen Pottery districts and wards of districts their figures and their explanations, he understood the Pottery figures, but he could not compare them or contrast them with the figures for the rest of the country. This year the Society was offering a Howard Medal for an essay on Infantile Mortality, and he hoped that would bring out some really valuable statistical information.

With regard to the question as to the operation of the various causes which produced infantile mortality, the answer was, no doubt, "all three together." While the very high mortality seemed to be caused by the general causes alluded to in the Paper and by speakers in the discussion, that which made a district like the Potteries top the others was the special poisoning of a particular trade. The disease of a particular trade affected the whole of the population to come, particularly from the special liability of the mothers to those diseases; they were the "pre-natal" causes of death within the first three months in many cases. The reports of the Medical Officers of Health for those districts went to show that there were all the bad causes at work which affected mortality where women were employed; but in the Potteries there was also a low state of health amongst the entire population caused by industrial poisoning; by two or three distinct industrial diseases, such as lead poisoning, and two forms of fibroid phthisis.

The Census Committee of the Society, over which Sir Athelstane Baines presided, was putting before the Government suggestions as to improvements which might be made in the Census Bill of next session. The Society desired that the Bill should have been introduced this year. Personally he had even expressed the view, in which some of the most weighty members concurred, that they ought to have a permanent Census Office; that the Census should not be a temporary job of five years, followed by an interval of five years, as it was at present. Though the results were only worked out many years after the Census was taken, it was only a temporary employment for the greater number of those who did the work, and the highest skill could not be expected. He thought this Paper and the discussion might strengthen the hands of that Committee.

Sir EDWARD BRABROOK seconded the vote of thanks, which was unanimously carried.

Miss HUTCHINS said she was not in a position to reply in detail to all the points which had been raised.

With regard to Liverpool, she owed the Society an apology, because she did not know the facts about Liverpool, but in working up other portions of the paper she had inadvertently omitted to insert this necessary qualification. But with regard to having made use of the Registrar-General's decennial volume, 1891 to 1900, she might say that if any of the critics who objected to her use of that document were to start investigating the points she had wished to study, they would find it was impossible to do so without that report. Its statistical method was correct, because it gave figures smoothed out for ten years instead of only for one year. Again, the figures for the administrative areas, for some unknown reason, did not as a rule separate boys and girls as far as she knew, certainly not in the summary. In some of the Medical Officers' reports they might be separated; but her whole investigation would have broken down if she had been restricted to the Annual Summary for the administrative areas, because it did not give any of the figures she wanted. Her paper had not, however, stopped at the decade 1891-1900, but contained several figures of mortality for more recent years which served to show the improvement in public health that has undoubtedly taken place, but also showed that the improvement, being fairly uniform, left the comparative mortality of Lancashire and England very much where it was.

She had perhaps not made herself quite clear on the subject of infant mortality and married women's employment, as one or two speakers appeared to think she regarded the one as caused by the other. The section, "Employment of married women in Lancashire," however, showed on the contrary that she herself was inclined to think that this impression, which was a very popular one, might be exaggerated, and that probably more consideration ought to be given to the general conditions tending to promote health, and less to the one fact of married women's employment. It was significant in this connection that infant mortality in Lancashire had fallen in recent years, although there was no reason to suppose married women had abandoned work to any extent.

Miss Hutchins desired to thank the Fellows present for a most interesting discussion and for the facts and information several speakers had contributed.

The following were elected Fellows of the Society:—

George Ranken Askwith, K.C.
John Maynard Keynes, M.A.
Benjamin Howell Morgan.
Arthur James Pearce.
C. S. Raghunatha Rao.
John Walter Thomson, F.F.A., A.I.A.

The Increase *in the* National Consumption *of* Water.

By William Ralph Baldwin-Wiseman, M.Sc., Assoc.M.Inst.C.E., F.G.S., F.R.Met.S.

[Read before the Royal Statistical Society, 27th April, 1909,
Sir J. Athelstane Baines, C.S.I., in the Chair.]

General introduction.

Having been engaged for some years past in an economic investigation of the water resources of one of the principal geological formations from which underground water supplies are derived in this country, the author had occasion to note that the supplies were increasing at a greater rate than the population in established areas and thus, being led to extend the scope of the investigation along this line to the supply of the whole country, found that the same general conditions prevailed.

Although the investigation is in no wise so exhaustive or complete as the author would have wished it to have been, he ventures to think that the data embodied in this Paper may be of some interest, not only to fellow water engineers, but to statisticians generally, as a subject of national importance.

Historical note.

Despite the lack of organised water supply in mediæval times, the history of communal supplies in this country goes back to the time of the Roman occupation. Remains of Roman aqueducts have been found, which led water into the town of Vinovia (Binchester, county Durham) and into a reservoir outside the walls of Epiacum (Lanchester, county Durham); the remains of their wells sunk into the chalk, in some cases to a depth of 200 feet, have been found at Woodcutts, Winterbourne Kingston and other villages in Dorset and Wiltshire and it is very probable that water was delivered in some cases into the houses, since pipes have been found in the ruins of some of their villas.

These works were swept out of existence, or fell into desuetude, in the centuries which followed and it is not until the thirteenth century that one finds any record of the construction of works for local supply, or of the presentation by various local benefactors of springs, streams and wells on their estates, to the use of the community amongst whom they had dwelt. The earliest of such records is that of London. Gilbert Sandford conveyed water under a grant from Henry III in 1236, from Tyburn into the city, through a lead pipe of six-inch bore. In 1240, Amicia, Countess of Devon, ordered the construction of waterworks and presented them to the town of Tiverton,[1] which thus has the honour of possessing the oldest municipally controlled waterworks in this country.

In 1301, certain estates containing springs were presented to the town by the master and brethren of the ancient guild of Lichfield and the present supply of the town is still administered by a charitable trust, known as the Lichfield Conduit Lands.

In 1310, the Friars Minor of Southampton,[2] granted to the burgesses of that town the use of a pipe with a key, from their supply, the spring head of which at Hill, now within the borough boundaries, had previously been granted to them by Nicholas de Shyrlegh in 1290; in 1420, the old pipes having become defective and the Friars being too poor to repair them, they were repaired by the executors of John Bennett, who had bequeathed the money to this purpose, for the good of his soul. The system was presented to the town by the warden of the friars and the executors, on the condition that the latter should, at their sole expense, but using such of the old material as was available, repair the works and fix two pipes of equal capacity in the conduit, one discharging into a cistern for the use of the community and the other discharging into the friars' cistern, within their cemetery wall. Coventry[3] had a public well previous to 1453, for at the Michaelmas court leet held in that year, it was decreed that no pails or bottles should be thrown into the Broadwell on pain of forfeiture of the same; sixteen years later, a water place was ordered to be made in Catesby Lane and an honest man to have the keeping of the key; in 1483 there were four conduits and eight keepers, who collected a rate for the maintenance and repair of these, levying an extra rate of 6*s.* 8*d.* on any dyer or brewer who used the water for his trade; some years later, it is recorded that several of these traders were so taxed, to double this amount. Thirteen years later, another well was sunk near the door of St. Michael's Church.

The supply at Bath was instituted in 1500 and twelve years later the Chamberlain of Nottingham was charged at a court leet with not duly attending to the town well of Nottingham. In 1559 Lucas Cock, the Mayor of Plymouth,[4] paid Mr. Forsland 16*s.* 10*d.* for "viewinge the ground, wherebie fresh water might have been "brought into the town." Seventeen years later another surveyor is paid thrice this amount for a similar service; in 1585 the Act was passed authorising the construction of the first lengthy aqueduct in this country, the famous leet for conveying the water of the river Meavy into the town; this work, 24 miles long, although fetching the water a crow fly distance of 7 miles, was constructed by Robert Hampen, under the superintendence of Sir Francis Drake, M.P., who busied himself with the Parliamentary Bill and the surveying and setting out of the works. This served Plymouth till 1828, when the first reservoir was constructed, another was built in 1860, but before 1898, when Burrator dam was commenced, the storage capacity was only 12·8 million gallons, now it aggregates 662,000,000 gallons.

In 1600 the Mayor of Lymington[5] ordered "that the inhabitants "hereafter named should be continuallie contributories apiece for a "quarterlie and yearlie paiement, for the better meynteyninge of "the Towne well, in the High Street, being the Comon well, as also "for the present reparacions to be done unto the same." Eighteen names follow, with a total contribution of 6*s*. 6*d*., of which :—

3 contribute 2*d*. each.
10 ,, 4*d*. ,,
4 ,, 6*d*. ,,
1 contributes 8*d*.

About the same time Chester[6] was supplied from the River Dee by a company of adventurers, who installed a pumping station below the weir. This served for over two hundred years, but since 1826, when the present company was formed and took over the supply, the intake has been twice shifted up stream, so that the present intake is 1·5 miles above the weir.

In 1615, the Town Council of Oxford[7] granted permission to open the streets to lay pipes for the conveyance of water to Carfax and thence to Christ Church and other colleges; in the following year they granted a site to Otho Nicholson for the erection of a conduit at Carfax, supplied through wooden pipes from springs at Hincksey Hill. As elsewhere, these wooden pipes were bored from trunks of elm and oak and not only frequently occasioned considerable loss of water, by leakage at the joints and occasional bursts, but also discoloured and tainted the water with the products of decomposition and vegetable growth; in 1702 the Corporation renewed the lease of the works on the condition that the lessee laid leaden pipes in place of wooden ones. Twenty-eight years later they took the works under their own management and after running them for other fifty-seven years discontinued this supply and substituted others.

Reading had its first organised supply in 1629, York in 1677, Leicester in 1692 and Windsor in 1696. A company was formed to supply Nottingham in 1707 and in 1709 the first Act of Parliament relating to the supply of Liverpool[8] was passed, empowering the

Corporation to grant Sir C. Moore liberty to supply the community from springs at Bootle. Daventry was supplied in 1716, Stamford in 1768, Bradford and Devonport in 1793 and Wirksworth at the close of the century.

Although cast-iron pipes had been used in the water-supply system of the palace of Versailles in 1664, it was not until 1746 that cast-iron mains were first laid in London and more than seventy years passed before engineers regularly adopted cast-iron mains in any English waterworks.

Even as late as 1810 Murdoch took out a patent for boring stone pipes and such pipes, bored from the oolites of the West of England, were used in considerable quantities in the distribution of the water supply of Manchester and some other towns, but, owing to the high cost and their frequent failure, they were eventually abandoned in favour of cast-iron mains.

In 1829 James Simpson laid out the first waterworks filter bed, 1 acre in extent, at the works of the Chelsea Company, the precursor of the 1·3 million square yards of beds on which the water supply of 35·9 per cent. of the population of England and Wales is at present treated and of the still larger area laid out in the waterworks of Europe and America.

Two years later Thomas Hawksley, under whose firm it was the author's privilege for some time to serve, laid out the first English works for affording a constant supply to the town of Nottingham.

About the middle of the last century there was a general tendency to improve the quality, quantity and conditions of the supply, notably by constructing impounding reservoirs in upland areas, at remote distances from urban centres, by increasing the pressure and by giving greater attention to the bacteriological and chemical purity of the supply. In the last two decades considerable attention was paid to the reduction of waste by instituting systematic inspections of mains, connections and fittings and by frequent metering between the points of collection and consumption.

The movement for the municipalisation of water supply developed during the latter half of the century and at its close over 1,000 public authorities controlled 76·9 per cent. of the total number of installations, representing 58·6 per cent. of the total capital expenditure on waterworks. As the conditions and development of these early waterworks differed so radically from those of the last half-century, it may not be inappropriate, in order to emphasise the contrast, to briefly outline the water history of London, Liverpool, Manchester and Southampton.

London was at first supplied with water dipped from the River Thames and the streams, such as the Fleet river, Walbrook, Longbourne and Oldbourne, which flowed through its streets; from pools, such as that in Smithfield, that near St. Giles' Church, Cripplegate, or Agnes-le-Clair and Perilous pools, near Holywell and from wells, such as Clement's well, Clerkenwell, Holywell and Skinner's well. When these sources failed or became too foul to be used, steps were taken to convey the waters of remote springs into the urban area.

In 1236 Sandford conveyed water from Tyburn into the city and the West Cheap conduit; a cistern of lead, castellated with stone, was erected in 1285, in what is now Cheapside. In 1438 Sir W. Eastfield brought water from Highbury Barn, a distance of 4·3 miles and erected conduits for its distribution in Fleet Street, Aldermanbury and Cripplegate; forty years later, W. Campion, of Fleet Street, was publicly admonished for the crime of tapping the conduit by a pipe leading into his own house.

In 1535 the Common Council of the city granted money for bringing a supply from Hackney, 3 miles away, to a conduit at Aldgate erected for its distribution; eight years later an Act was obtained authorising the construction of works for procuring supplies drawn from Hampstead, Marylebone, Muswell Hill and divers places within a five-mile radius of the city, but reserving certain springs at Hampstead Heath for the supply of the town of Hampstead[9] and in 1546, springs were tapped at Hoxton, doubtless under the powers conferred by this Act.

In 1562 'Lord Mayor Harper rode the boundaries and viewed no less than 16 conduits; fifteen years later, over 1,500*l.* was expended in the construction of a conduit from Snow Hill to Holborn; still more may have been spent upon the Great Conduit supplied from Paddington, which stood at the corner of Cheapside, and was richly ornamented with carved work and statuary. In 1582 Peter Morrys, by means of a water wheel fixed in an arch of London Bridge, forced the water up to the Standard Conduit in Gracechurch Street, with later extensions water was delivered in Fleet Street and Aldersgate and in 1594 water was laid on to some of the better class houses. For many years water drawn from the conduits, from wells, or the river, was hawked from door to door, by water carriers or cobs, who retailed it in tankards of 3 gallons each; and such was the behaviour round the conduits at times, that the city authorities forbade the resort thereto of people armed with clubs or staves; at the close of the sixteenth century, there were probably 800 men engaged in this calling, for, in a petition to the city authorities, it is stated, that they and their dependents number over 4,000.

In 1606 an Act was obtained for the formation of the New

River Company; the work of cutting a channel 38·7 miles long from Chadwell and Amwell springs to the New River head at Islington was commenced in 1608 and completed in 1613 at a total cost of about 17,220*l.*; it was not viewed with general favour, for the Rev. W. Bidwell, in his book, "A brief description of the town "of Tottenham," describes the water as "brought with an ill will "from Ware to London." At the time of Sorbière's[10] visit in 1663, a part of the Thames-side district was somewhat inefficiently supplied by an engine, worked by two horses, raising water to the roof of Somerset House.

In 1669 the East London Company was established, followed by the Chelsea Company in 1723, the Lambeth Company in 1785, the West Middlesex Company in 1806, the Kent Company in 1809, the Grand Junction Company in 1811 and the Southwark and Vauxhall Company in 1845; other companies were formed at various times, but were absorbed by those previously enumerated, thus Morrys' works had passed by purchase into the possession of the London Bridge Waterworks' Company, which was acquired by the Southwark and Vauxhall Company in 1822.

During the cholera epidemic in 1848, the Lambeth Company's intake was moved from Lambeth to Thames Ditton and three years later the amalgamation of all the Metropolitan Companies was proposed, in a Bill, which did not become law, but an Act was passed in the following year, that no water supply company should have an intake below Teddington and that all reservoirs within a radius of 5 miles of St. Paul's Cathedral should be covered. Just fifty-one years after the first Bill had been rejected, the Metropolis Water Act was passed and the undertakings of the eight water companies became vested in the Metropolitan Water Board in 1904.

Liverpool obtained its first Waterworks' Act in 1709, empowering Sir C. Moore to supply the town from springs in Bootle-cum-Linacre, but in the middle of the century, the greater part of the supply was derived from a public spring, called the Fall Well, at the head of a small stream, running from the north side of the Great Heath, which laid on the south side of the town; a hundred years later that magnificent piece of municipal architecture, the St. George's Hall, was erected just north of this spring; in 1786 the Corporation obtained another Water Act, but at the end of the century over sixty water carts were engaged in the daily delivery of about 100,000 gallons of water.

In 1799 the sinking of the Berry Street well was commenced and the Liverpool Waterworks Company was incorporated, under an Act of Parliament, to supply the town from springs and wells at Bootle; twenty-three years later a second company, the Liverpool and Harrington Waterworks Company, was formed to take over the powers contained in the 1786 Act; the new company engaged in a keen competition with its older competitor and, as in London, not infrequently each company laid a line of mains in the same street; but the service was in no wise improved, as the consumers were only supplied twice or thrice per week for a few hours on each occasion and sometimes at early hours in the morning or late in the evening.

Numerous wells were sunk between 1840 and 1847, when the works of the two companies were purchased by the Corporation. Ten years later the supply from Rivington, 24·5 miles away, was introduced; in 1892, a still greater supply was introduced from Vyrnwy, 67 miles away.

Manchester was at first supplied from the works of Sir O. Mosley, the lord of the manor of Manchester, with water pumped from the River Medlock; later, the Manchester and Salford Waterworks Company purchased these works, built a reservoir, collecting the surface drainage of 1,500 acres of land at Gorton and supplemented the supply from this source with water drawn from the Manchester and Stockport Canal and from a well in the red sandstone and thus afforded a daily supply of about 3,000,000 gallons.

The Corporation purchased the company's works, in 1847, for 533,561*l*., and obtained an Act for the construction of reservoirs in the Longendale valley, 17·8 miles away; the scheme was commenced in 1848 and completed in 1884 by the construction of Audenshaw service reservoirs and afforded a storage of 6,006,000,000 gallons. In 1879 an Act was obtained for a still larger supply from Thirlmere, 95·3 miles away; work was commenced in 1885, the first instalment of 10,000,000 gallons a day was delivered in 1894, followed by a second similar instalment in 1904.

The water supply history of Southampton, from 1290 to 1420, has already been related. Interesting records of the cost of repair and maintenance of the conduits occur in the Roll of Account of John Bentham, steward of the town in 1428-29 and some of these accounts are considerable; in 1490 a new well was made in Houndwell Field, just outside the walls, a watering place for horses and a washing place for women, being also provided. Twenty-five years later John Flemynge, a namesake and probably a descendant of one of Bennett's executors, granted the spring-head in Lobery Mead to the Corporation, together with the right of entry upon his land, for the purpose of cleansing and repairing the watercourse.

In 1536 the names of various burgesses liable for rates for the repair of the conduits were kept in the Boke of the Condyte, and in the Roll of Assessment of 1548 there is an account for bringing water into the town; forty-six years later Roger Pedley undertook, for certain considerations, to bring a stream of water through the Bargate, or to afford a continuous supply, night and day, from a conduit near the east end of St. Michael's Church, but the scheme must have been a failure, as the leasehold rent was reduced from 2*l.* to 1*l.* per annum in 1617; three years later this was still further reduced to 3*s.* 4*d.* and in 1675 the house where the conduit stood was taken down.

In 1738 some of the inhabitants refused to pay the water rate and in the following year an Act was obtained by the Corporation, vesting the management of the waterworks in a commission of 32 members, the town then possessed a conduit head and pumps at Achard's Bridge, the Houndwell waterhouse and 4 public conduits near churches in the High Street, when these were removed the town was supplied from 40 public fountains; other Acts for water supply purposes were obtained in 1747, 1803 and 1810; under the powers conferred by these Acts, reservoirs were constructed on the Common, to the north of the town. In 1830 a supplementary supply was drawn from the river Itchen, at Woodmill and in 1836, under another Act, repealing all the previous Acts and reorganising the supply, wells were sunk at Northam.

In 1838 the sinking of a deep well on the Common was commenced, continued for some years and eventually abandoned as futile, after some thousands of pounds had been expended; twelve years later another Act was obtained, authorising the abstraction of water from the river Itchen at Mansbridge, 1 mile above the older pumping station at Woodmill and the construction of the third and fourth reservoirs at the north end of the Common. In 1885 another Act was obtained, authorising the construction of works for obtaining a supply by pumping from the chalk at Otterbourne, 8 miles north of the town. The older works have since been abandoned and the entire supply is now drawn from this source.

Population.

Although the whole period of organised water supply is fully covered by the census, one is tempted to investigate the estimates of the population in the pre-censal period, in order to determine whether the great increases in the population in the nineteenth century are abnormal or otherwise, as upon the answer to this query, one must be guided in the provision of water supplies for future populations.

These estimates are many and varied and excepting for the disconnected records of Domesday Book, the Poll Tax returns of 1377 and the Hearth Tax of 1696, have little or no reliable foundation and are, in fact, nothing more than mere guesses.

Some of the more probable are set out in Table I, and one notes that whilst in the censal period the population increased from 8·9 to 32·5 millions, at the rate of 1·305 per cent. per annum, it only increased at the rate of 0·260 and 0·532 per cent. per annum, from 2·2 millions in 1377, to 5·2 millions in 1700 and to 8·9 millions in 1801.

If, as in Table II, one investigates the rate of growth of the urban population, one finds that the rate of increase is considerably greater than that of the national population viewed as a whole and, owing to the supply of water to places beyond the municipal boundaries, as the author will show later, the population provided with organised water supplies has increased at an even greater rate than that of the urban population. The apparent stagnation of urban and national growth in the middle ages was due to a variety of causes; the restriction of urban areas, the limitation of trade owing to the almost entire absence of suitable means of inter-communication, the incidence of famine, pestilence, civil commotion and war, the lack of sanitation, surgical skill and medical comforts, all served to cut off the non-progressive and weakly fringe of the population, at a time when strenuous progressiveness and vigour were absolutely essential to the continuance of the national existence. Under the more sanitary and humanitarian conditions of the nineteenth century, the span of life has not only lengthened, but the weakly and less virile elements of the population have been preserved, thus tending, by mere numbers, to somewhat minimise the rate of increase; thus one arrives at the conclusion that the nineteenth century was in no wise abnormal and that a steady increase in the already considerable population may be expected throughout the twentieth century.

In Table III the author has tabulated the populations of several towns at various times. Some of these were mere hamlets in the middle ages, owing their existence to the more or less friendly shelter of some cathedral, abbey or castle, or to the accident of a fording place across a stream, or the confluence of two main roads in their immediate vicinity and their expansion to the adoption of some specialised industry; whilst others have more recently sprung into being, owing to the adaptability of their site to the exigencies of some special trade or purpose.

Taking the steel trade alone, the present university city of Sheffield, with an area of 36·9 square miles and a population of 448,000, was, as recently as 1840, under manorial rule, whilst the county borough of Barrow-in-Furness, which now has a population of 69,000 on an area of 32·8 square miles, had a population of only 100 just thirty years before its incorporation in 1867; the urban district of Scunthorpe, which now has a population of 9,200, had a population of only 600 about thirty-seven years ago; also the transfer of a large steel works from Dronfield to Workington between 1881 and 1891, increased the population of the latter place by over 9,100 and Middlesbrough which was incorporated a municipal borough in 1853, has almost doubled its population in each of the last four decades and now has a population of 100,000 on an area of 4·4 square miles.

Similar growth is noticeable in the towns interested in the carrying trade. Liverpool, which in the twelfth century was but a tiny hamlet, developed an oversea trade with Ireland and the West Indies in the seventeeth century, profited by the insecurity of the Channel and the North Sea during the Dutch and French wars and established its first dock of about 3 acres in 1715 and now, with Birkenhead, has a total dock area of 370 acres, with 35 miles of quayage; it has thus developed from a town of 500 people, on an area of 0·08 square mile in the thirteenth century, to one of 0·29, 20·69, 23·30, and 27·80 square miles, with corresponding populations of 5,100, 629,500, 690,000 and 739,200 in the years 1699, 1891, 1902 and 1908.

Similarly Bristol has undergone four extensions of boundary in 1836, 1895, 1897 and 1904, and now has a population of 363,000 on an area of 26·6 square miles.

Crewe, Swindon, Eastleigh and other towns have grown, or are growing, from insignificant villages to important centres, owing to their favourable situation for administration on important lines of railway; others, such as Grimsby, Fleetwood, Heysham and Fishguard, have been, or are being developed, as the sea terminals of important lines of railway.

Others, such as Southport, Cleethorpes and Blackpool have sprung into existence and developed as holiday resorts; whilst others, such as New Brighton, Croydon and Ealing, have developed as residential districts, to house the better class workers in neighbouring centres of industry.

In the course of promoting a Bill for obtaining the necessary powers to proceed with the construction of proposed waterworks, it has not infrequently happened that other authorities have claimed to be supplied from certain gathering grounds included in the scheme of the promoters, or from the pipe line which it is proposed to carry through their district; thus it has happened, that the water supply population has received a considerable augmentation on the opening of new works and the area of supply has been extended far beyond the municipal boundaries, as shown in Table IV. In some cases the promoting authority have given up their scheme and joined in the formation of a water board with their erstwhile opponents and other interested parties and this has given rise in the last few years to a new element in water supply administration, which will develop in the future and will alone be able to afford a supply to the more scattered rural elements of the population, considerable numbers of which, are at present, utterly unprovided for, the extent of which inadequacy can only be realised by those, whose professional quests for water, take them into some of the out-of-the-way villages, dotted about in various parts of the country.

Water supply.

The author has tabulated the annual supply of water in various towns and districts, at various times, in Table V, together with the population supplied, the allocation of the total supplies and the average supply per head per day under the several heads of domestic, municipal and trade supplies. The totals sufficiently indicate the considerable increases in the various supplies during the periods under consideration, but the statistics as to the supplies per head, although directly comparable, from year to year, in the same district, are somewhat complicated by a variety of circumstances, which the author proposes to briefly enumerate; firstly, as already pointed out, the boundaries of the water supply area but rarely coincide with those of the municipal area or of the census enumeration district and thus the population supplied, can only be arrived at by an estimate of the number of occupiers per house, based on a careful study of the census returns; not infrequently, the quantity supplied per head within the municipal area, differs from that supplied to the population of the outside areas; also in seaside towns and holiday resorts the number of visitors during the season, which can only be roughly approximated, materially increase the total annual supply and render the estimate of the supply per head somewhat artificial.

As water is retailed to domestic consumers and small traders in unlimited quantities, at a fixed annual charge, varying according to the rental value of the premises occupied and to large traders at so much per 1,000 gallons, passed through a meter, fixed in the consumer's premises, it is somewhat difficult to accurately apportion the domestic and trade supplies and customarily the small trader's supplies are included under the head of domestic and the metered supplies are alone classed as trade supplies; again, although in many of the large installations a most careful record is kept, it is not so well kept in some cases and the supply for municipal purposes is only arrived at by an approximation.

Some time after the supplies were introduced the pressures were increased and the older fittings proved defective and from this cause, together with more or less careless and wasteful use of the water on the part of the consumers, gave rise to considerable increases in the supply; but by systematic house-to-house inspection, installation of meters, dividing the area of supply into sub-districts, and in other ways, the total supply per head was considerably reduced and thus it may happen that sudden decreases in the supply per head per day may occur in a lengthy record of the water supply of a district.

Systematic inspections[11] to detect waste were commenced in Liverpool in 1859 and in 1868 attempts were made to localise the waste by metering the supply in selected districts; this proved so successful that the metering area was extended and the whole district of supply was cut up into a series of sub-districts; the system was eventually adopted in other towns. The magnitude of the work of waste detection in a large waterworks system at the present time may be appreciated from the following statistics relating to Manchester for the year ending 31st March, 1905:—142,272 taps and fittings were submitted for examination, of which 136,955 were approved and stamped, 912 meters were also approved and stamped; fittings in 51,787 premises were inspected and 40,191 inspections were made to detect waste.

According to Rankine, in the early days of modern waterworks development, the proper allowance should be 10 gallons per head per day, for each of the three divisions of supply—domestic, municipal and trade; but experience has shown, that, whilst the domestic allowance is too small, the other allowances are in general excessive and a better average proportion would be 18, 3 and 7 gallons per head per day, in the three sub-divisions. There are, however, considerable variations from these quantities in various districts, as an examination of Table V will demonstrate.

The increase in the total annual supply is due to a variety of causes, which can be best appreciated by studying the supplies under the various heads in detail. The domestic supply per head per day in a middle-class district has been variously estimated by Parkes, de Chaumont, and others to range from 12 to 21 gallons, made up as follows:—

	Gallons per head per day.
Cooking	0·7 to 1·5
Refreshment	0·3 „ 0·5
Ablutions	3·0 „ 7·0
Scouring	3·0 „ 5·0
W.C.	3·0 „ 6·0

The increase in the domestic supply was at first due to the displacement of older methods of sewage disposal by the introduction of the water carriage system, the fitting of baths and W.C.'s, not only in the better class houses, but also in the smaller dwellings, the provision of a separate tap within each cottage, instead of a single standpipe in a yard, supplying the block of dwellings enclosing it; in suburban districts, due to the custom of watering lawns and gardens, for which in most districts, a small extra charge is levied, entitling the owner to affix a hose to his tap and although some are supplied by meter, the increase in the number of hotels, hospitals, schools and industrial homes has also given rise to considerable increases under this head. Hospitals not infrequently use from 50 to 90 gallons per head per day, whilst hotels use from 50 to 175 gallons per head per day and as recently as 1907, the consumption at a certain industrial school was such, that the Local Government Board Inspector drew the attention of the managers to it as excessive, the quantities being as follows:—

	Gallons per annum.		Gallons per head per day.
Domestic use, ablutions, flushing....	20,000,000,	equivalent to	59·5
Laundry	1,750,000	,,	5·4
Swimming bath	2,000,000	,,	5·9
Farm	1,250,000	,,	3·7
Total	25,000,000	,,	74·5

The increase in the consumption of water for municipal purposes may be traced to the introduction of public baths and wash houses, the provision of conveniences in public streets, the erection of drinking and ornamental fountains, the adoption of electric light and power stations, gas works and abattoirs, to fire extinction, to sewer and drain flushing and to street watering and cleansing.

Public baths and wash houses were inaugurated by Liverpool Corporation in 1794 and 1842 respectively and are now maintained in various districts by about 250 local authorities under the Baths and Wash Houses Act of 1846 and its later amendments.

As gas, power and light stations come more naturally in the subdivision of trade supplies, the author proposes to discuss the supply for these purposes under that heading. The quantity of water used in street watering may be taken at about 20 gallons per square yard of road surface per annum, equivalent to about from 0·12 to 0·2 gallon per square yard per watering and to this must be added a further figure, to represent the water used in constructing new and making up old roads. Bristol used 28·7 million gallons in street watering in 1902 and four Metropolitan boroughs, with a total municipal area of 9·29 square miles, used no less than 95·7 million gallons in 1905.

The quantity of water used by local fire brigades varies from year to year, according to the frequency and intensity of the fires with which they have to contend, but over 1·7 million gallons have been used in quelling a single conflagration. The London Fire Brigade used 27 million gallons in 1903 and 13·5 million gallons in 1905 and the Liverpool Fire Brigade used 12·8 million gallons in 1899.

The trade supplies owe their increase to the enormous advances which have been made in the development of steam, gas, electric and hydraulic power, to the need for larger quantities of cooling water, to its increased application in various chemical and manufacturing processes, to the material improvement in the sanitation of works and in the care for the health of the employees and not infrequently, to the fact that traders have found it to be more advantageous, with increasing trade, to draw their supply from the local authority, or company, rather than maintain their own pumping plant.

For some time past the author has endeavoured to collect data which might afford some idea of the relative proportion of the water supply of any particular works or industry, used in the process of manufacture and for the auxiliary purposes of power production and works sanitation; but the results at present available are too meagre to base any arbitrary conclusions upon them, although he is convinced that considerable economies could be effected, in various industries, if such records were available for localising and reducing excessive consumption.

In discussing the supplies of a few of the more important industries the author has attempted to indicate the growth in the total consumption of water in particular industries, rather than the growth in the supply of water by particular water authorities to various trades, as the statistics would be somewhat unwieldy and the increases in the total trade supplies in various areas is sufficiently well indicated by an inspection of Table V.

The enormous development of steam power during the past century has given rise to considerable increase in the consumption of water, which would have been even greater, but for various economies effected in its more efficient operation. The increase in the working pressure of the boiler from 60 to 300 lbs. per square inch during the past fifty years has effected a saving of from 1·1 to 1·9 lbs. of steam per horse-power hour, multiple expansion of the steam, increased piston speed and the provision of efficient drains, has almost halved the cylinder condensation; jacketing the cylinders, with from 7 to 12 per. cent. of total steam, has reduced the steam consumption, by, from 9 to 25 per cent., superheating the steam has also reduced the consumption, so that an efficient modern plant can now be operated on a consumption of from 2·5 to 3·5 gallons of water per horse-power hour.

It is somewhat difficult to arrive at an exact or even an approximate estimate of the steam power of the country, either from a consideration of boiler or of engine capacity, but one ready example offers itself, in the railway returns, made under the Railways Regulations Acts of 1840 and subsequent years, for assuming a water consumption of 30 gallons per train mile—it varies from time to time and with different types of engines—one finds that the supply for this purpose alone, exclusive of the further consumption in stations and works, must have increased from 6·5 to 10·7 thousand million gallons per annum in the past twenty-five years, as shown in the following table:—

Railways in England and Wales.

Year.	Number of locomotive engines.	Number of train miles in millions run during year.	Approximate water supply in millions of gallons on the assumption that the consumption is equivalent to 30 gallons per train mile.
1882	13,052	217·4	6,522
'87	13,825	236·5	7,095
'92	12,931	258·9	7,767
'97	14,818	304·6	9,138
1902	15,358	332·8	9,984
'07	15,897	358·5	10,755

Much of this is drawn from the companies' own wells and reservoirs, which are located at various points along their lines, but in some cases, supplies ranging from 264 to 12 million gallons of water per annum, are taken by the railway companies from various local authorities.

A considerable quantity of water is used, not only in the production of gas, but also, when it is used as a source of mechanical energy; it is estimated that the quantity of water used, which varies according to the method of manufacture, is on an average from 2 to 4 gallons per 1,000 cubic feet of gas made; the output of coal gas by the companies and local authorities in England and Wales, increased by 82 per cent. in twenty years, to 139·9 thousand million cubic feet in 1905, whilst in the same period, the output of producer gas has increased from practically nothing to its present considerable quantities. When used in an internal combustion motor, from 9 to 4 gallons of water are required, for each brake horse-power hour developed, the figures varying thus widely, according to whether the water used for cooling the cylinder is run to waste, when the former figure holds; or whether this water is circulated through a cooling system, in which case the lower figure holds; how much gas is really used for power production it is difficult to estimate, certainly only a small percentage of the output of the coal gas companies and authorities, but to this must be added the motive power generated by gasified oil and producer gas; and one producer gas company alone, had at the beginning of 1903, installed plant on their system, equal to a daily output of 270,000,000 cubic feet of gas, equivalent to 4·5 million horse-power hours.

In electric light and power stations, considerable quantities of water are used for boiler feed, and for cooling and condensing purposes; one generating station, with an output of 2·5 million Board of Trade units per annum, uses 150,000,000 gallons of water per year, and the quantity is likely to be still further increased in the near future.

Hydraulic power[12] is not so generally used in this country, although there are numerous private installations belonging to railway, dock, steel making and other companies, there are only a few public services in operation, details of three of which are set out in the following table:—

District.	Supply of water derived	Established in	Year.	Number of machines in operation.	Millions of gallons of water used per annum.
Liverpool	From Corporation mains	1888	1890	162	125·0
			'99	166	75·1
London	Pumped from River Thames and Regent's Canal	'84	'86	364	66·1
			'98	3,240	623·4
			1908	6,368	1,029·5
Manchester	From Corporation mains	'94	'02	1,600	180·6
			'03	1,708	185·4
			'07	1,974	232·3

The consumption of water in breweries varies, approximately in the inverse ratio of the output, from 5 to 25 gallons of water per gallon of beer brewed, taking an average of 16 gallons of water per gallon of beer produced, the percentages of the water used in the various processes are as follows:—

11·0	per cent.	actual brewing liquor.
37·5	,,	cooling water.
45·0	,,	cleansing water.
6·5	,,	boiler feed, condenser water, &c.

As the output of beer in England and Wales has increased from 650,000,000 gallons in 1840 to 902,000,000 gallons in 1907, the corresponding consumption of water on this estimate must have varied approximately from 10·4 to 14·4 thousand million gallons per annum in this period of sixty-seven years.

As the number of breweries have considerably decreased during the past twenty years, being 16·1, 8·8 and 5·1 thousands in 1886, 1896 and 1906 respectively, it is more than probable that the consumption of water, irrespective of steam power, per gallon of output, was higher for the greater number of small concerns in 1840 than for the fewer larger concerns in 1907 and thus the figure 10·4 may need to be somewhat increased.

One firm alone used 600,000,000 gallons of water last year, of which 36·3 per cent. was pumped from their own wells and the balance of 63·7 per cent. was purchased from the local authority. Another firm, with an annual output of 18,000,000 gallons of beer, pumped 20,000,000 gallons from their own wells and purchased 85,000,000 gallons from the local authority.

Similarly the consumption of water in distilleries varies from 30 to 70 gallons of water per gallon of spirit produced and as the production of spirit in England and Wales ranged from 5·5 million gallons in 1847 to 13·5 million gallons in 1907, the corresponding average consumption of water in this business has varied from 275·0 to 675·0 million gallons in the respective years.

In 1852 there were 304 paper mills in this country, which increased to 354 in 1882 and have since declined, owing to the closing down of some of the smaller mills, under the stress of foreign competition. These mills are, for the most part, located on streams, or derive their supply from private wells and hardly any of these concerns take their supplies from public water authorities.

The present annual output is estimated at 900,000 tons of paper and as the production of one ton of paper entails a consumption of from 10,000 to 200,000 gallons of water, according to the class and the processes of manufacture, it follows that at least 94·5 thousand million gallons of water are annually accounted for by this trade.

Steel works also require a considerable quantity of water, but, owing to the varied nature of the products and of the processes of manufacture, it is somewhat difficult to arrive at a correct estimate of the consumption of the whole trade. Many pump their supply from streams flowing through their works, some draw from private reservoirs and others take their entire supply, or supplementary supplies, from the local authority or waterworks company.

One important firm has taken the following annual supplies during the past twenty-five years from a local authority :—

Year.	Annual supply of water.		Year.	Annual supply of water.	
	In millions of gallons.	In terms of 1881 supply as unity.		In millions of gallons.	In terms of 1881 supply as unity.
1881	190	1·00	1896	304	1·60
'86	154	0·81	1901	295	1·55
'91	257	1·35	'06	283	1·49

Another important firm has a contract with a waterworks authority to take a 1,000,000 gallons a day for ten years, and a few firms use an even larger quantity daily than this.

The Corporation of Workington, in addition to their Crummock Lake works, maintained solely for domestic and municipal water supply; established in 1885, under an Act obtained in 1883, à separate supply, for works only, drawn from the river Derwent, which at the present time supplies over 660,000,000 gallons a year, mainly to steel and iron works in the district.

The textile industries are also responsible for very considerable increases in the consumption of water, but the amount is somewhat difficult to approximate owing to the varied nature of the processes followed in the several trades; one firm used 20·4 million gallons for wool washing alone last year, of which 8·6 per cent. was taken from the local authority and the remainder was drawn from their own wells; several dye works use as much as 240,000,000 gallons of water per annum. A Yorkshire firm of bleachers used 163,000,000 gallons of water in 1903 and 156,000,000 gallons in 1908, a Lancashire firm in the same trade used 73,000,000 gallons last year, of which 77·5 per cent. was drawn from the stream passing through their works, 20·0 per cent. was pumped from their own wells and 2·5 per cent. was purchased from the local authority and a Midland firm of bleachers used 33·8 million gallons last year, of which only 0·6 per cent. was supplied by the local authority.

In tanning, the consumption of hides has increased over 400 per cent. in seventy-six years, from 48,000,000 lbs. in 1820 to 196,000,000 lbs. in 1896, during which period, there would be a corresponding increase in the consumption of water for this purpose; whilst many firms in this business use becks and streams, others purchase their supply from the local waterworks authority; one northern firm has taken the following quantities of water during the past fourteen years:—

Year.	Annual supply in millions of gallons.	Year.	Annual supply in millions of gallons.
1895	0·1	1905	1·4
1901	0·8	'08	2·4

Of the lesser industries a considerable quantity of water is used in starch and soap making, the output of which latter, increased from 25·4 thousand tons in 1801 to 96·9 thousand tons in 1851 and the duty on this being abolished two years later, there are no reliable statistics upon which to base the present annual output, which cannot be far short of 200,000 tons; this considerable increase, together with the initiation and development of many chemical industries during the past century, will account for considerable increases in the consumption of water for industrial purposes of this sort. There has also been of late, a tendency to use more water in farming and market gardening, as waterworks systems have been extended to or developed in agricultural areas and increasing quantities of water are used on fruit farms, in glass-house cultivation and in dairy work. In the latter business about 3·5 gallons of water are used for cooling each gallon of milk, but the market value of the milk is considerably enhanced.

In this connection the author would point out the strenuous effort now being made, to insert a protective clause, in the agricultural interest, in all Water Bills before the present session of Parliament.

Of course, much of the water used in one industry, especially that pumped from streams, may be returned to the stream and used by another trade at a lower point in the stream, thus increasing the apparent total consumption and a more exact method would be to investigate the consumption for trade purposes in each locality and along each river, but, unfortunately, too little data are at present available to form an estimate in this way.

An estimate of the total trade consumption was made in Liverpool in 1892 and it was found that, excluding the water supplied from the mains, unmetered to the small trader, as domestic water, the total trade consumption was 25·3 million gallons per day, of which 21 per cent. was drawn from the Corporation mains, 30 per cent. was pumped from private wells and the remainder was drawn from river and canal.

In all probability the trade consumption, like the domestic, will continue to increase and if the canal system of the country is ever resuscitated, to such an extent, as to offer any really serious competition to the railways, the water resources of the country will be still further taxed to maintain an adequate supply at the summit levels of the several canals.

Considering the supply under all three heads—domestic, trade, and municipal—the author has shown in Table VI how the water supply obligations have increased in a few districts in various periods and in the following table, which shows the average annual rate of increase in the total annual water supply, during each of the various periods all terminating in 1906, as a percentage of the annual supply in 1906, it is seen that, in general, the rate of increase is greater in recent times than in those more remote:—

Water supply area.	Total supply in millions of gallons in the year 1906.	Average annual rate of increase in the annual water supply as a percentage of that in 1906 in periods of years ending in 1906.					
		55.	45.	35.	25.	15.	5.
Derby	1,051	—	1·53	1·55	1·37	2·08	2·12
Liverpool	10,801	1·54	1·14	1·17	1·64	2·47	2·24
London	82,125	1·42	—	—	1·96	1·19	1·27
Manchester........	13,511	—	1·58	1·69	1·96	2·41	3·64

Conclusion.

With such increases in the future there will be an increasing competition for the remaining first-class upland reservoir sites, which will become fewer and fewer as time goes on and these will in general be more costly to adapt to the purposes of supply than those first adopted, also with heavier and more frequent pumping of the subsurface water, there is likely to be more litigation and disagreement in densely occupied areas, as to the alleged depletion of the underground water supply.

Now although there are much scattered and discontinuous data on stream flow and underground water levels, they are neither available, nor particularly useful, for exact comparative study and it is therefore highly desirable that steps should be taken at an early date to form some central authority, either as a separate body or as a department of the Local Government Board or the Board of Agriculture, which should be charged with the duty of water conservancy in its widest application and for that purpose should engage in a close and exact study of the water resources of the country.

Such an authority could co-ordinate its work with, and also supervise, that of water supply and sewage disposal authorities, who should be compelled to make yearly returns like gas, electric light and railway companies ; also that of river conservancy, rivers pollution and fishery boards, county councils and other authorities who might also furnish some annual returns ; the water supply data collected by the officers of the Geological Survey might also be handed over to this authority.

It should collect systematic data on rainfall in upland areas, where rain-gauge stations are not at present established, also data on stream flow—normal, dry weather flow and flood discharges over the various geological formations and data on the underground water levels.

It should also invite voluntary contributions of data as to the water levels at various periods, together with a continuous record of the quantities pumped from various private wells. These would be supplementary to the officially collected data and perhaps, the continuous record of such voluntary data, occasionally certified by an official inspection, might be taken as evidence in the adjudication of claims for damage by alleged depletion.

It should publish an annual report and there would thus, in the course of a few years, be available a mass of well-digested and reliable information, which would aid and guide all interested in an economical development of the water supply of urban areas or of estates, whilst at the same time there would be a special department available, to advise Parliament as to the economy or otherwise, of the schemes of water supply, sewage disposal and river regulation laid before it, thus ensuring for future generations the mechanism for the most efficient and economical administration of the national water resources.

In conclusion, the author would tender his sincerest thanks to the directors, managers and engineers of various industrial concerns and waterworks who have at various times favoured him with any of the statistics embodied in this paper.

Tables showing :—

I. The estimated population of England and Wales in the pre-censal period.

II. The distribution of the population of England and Wales in pre-censal and censal years.

IIa. The distribution of the population of England and Wales at the taking of the last two census returns.

III. The population in thousands in twenty-four towns at various times from 1085 to 1908.

IV. The area within the municipal limits and water supply districts at various times.

V. The water supply in various towns and districts.

VI. The rate of increase in the annual water supply in various periods.

TABLE I.—*Showing the estimated population, in millions, of England and Wales in pre-censal years, according to various authorities.*

Year.	Population, in millions, according to the estimate of									
	Cunningham.[13]	Finlaison.[14]	Howlet.	King.[15]	Malden.[16]	Marshall.[17]	Mulhall.[18]	Price.[19]	Rickman.[20]	Statistical Journal.[21]	Young.[22]
1066....	—	—	—	—	—	—	2·15	—	—	—	—
'86....	—	—	—	—	1·50	—	—	—	—	—	—
1346....	2·50	—	—	—	—	—	—	—	—	—	—
'77....	—	—	—	—	2·25	—	—	—	—	—	—
'81....	—	—	—	—	—	—	2·36	—	—	—	—
1480....	—	—	—	—	—	—	3·70	—	—	—	—
'85....	—	—	—	—	—	—	—	—	—	2·50	—
1528....	—	—	—	—	4·36	—	4·36	—	—	—	—
'47....	—	—	—	—	—	—	—	—	—	4·00	—
'80....	—	—	—	—	—	—	4·60	—	—	—	—
1600....	5·00*	—	—	—	—	—	—	—	—	—	—
'72....	—	—	—	—	—	—	5·50	—	—	—	—
'80....	—	—	—	5·50	—	—	5·53	—	—	—	—
'88....	5·50*	—	—	—	—	—	—	—	—	—	—
'90....	—	—	—	—	—	—	—	6·60	—	—	—
'96....	—	—	—	5·50	5·50	—	—	—	—	—	—
1700....	—	5·13	—	—	5·00	5·11	—	—	6·04	5·47	—
'10....	—	—	—	—	—	—	—	—	—	5·24	—
'12....	—	—	—	—	—	—	6·28	—	—	—	—
'14....	5·75*	—	—	—	—	—	—	—	—	—	—
'20....	—	—	—	—	—	—	—	—	—	5·56	—
'30 ...	—	—	—	—	—	—	—	—	—	5·80	—
'40....	—	—	—	—	—	—	—	—	—	6·06	—
'50....	6·02*	6·04	—	—	—	6·48	—	—	6·52	6·47	—
'54....	—	—	—	—	—	—	7·02	—	—	—	—
'60....	—	—	—	—	6·50	—	—	—	—	—	—
'69....	—	—	—	—	—	—	—	—	—	—	8·50
'70....	—	—	—	—	—	—	—	—	—	—	8·50
'77....	—	—	—	—	—	—	—	4·76	—	—	—
'80 ...	—	—	8·69	—	7·80	9·56	8·08	—	—	7·95	—
'90....	—	—	—	—	—	—	—	—	—	8·67	—

* Authority unknown.

Table II.—*Showing the distribution of the population of England and Wales in pre-censal and censal years.*

Year.	Population in millions.			Population in terms of that in the year. 1696 as unity.		Rate of increase of the population per cent. per annum.		Number of	
	Total.	Urban.	Rural.	Total.	Urban.	Total.	Urban.	Houses in millions.	Inhabitants per house.
1696[15]	5·50	1·24	4·26	1·00	1·00	....	....	1·32	4·2
1769[22]	8·50	5·70	2·80	1·55	4·60	0·597	2·111	....	....
1801....	8·89	4·17	4·72	1·62	3·37	0·141	−0·981	1·58	5·6
'51....	17·93	9·16	8·77	3·26	7·38	1·412	1·585	3·28	5·5
'61....	20·07	10·93	9·14	3·65	8·82	1·134	1·788	3·74	5·4
'71....	22·71	12·91	9·80	4·13	10·40	1·246	1·670	4·26	5·3
'81....	25·97	17·29	8·68	4·72	13·94	1·351	2·969	4·83	5·4
'91....	29·00	21·74	7·26	5·27	17·53	1·109	2·321	5·45	5·3
1901....	32·53	25·05	7·47	5·91	20·20	1·154	1·427	6·27	5·2

Table IIa.—*Showing the distribution of population in England and Wales at the taking of the last two census returns.*

Range of population.	Number of districts.	Population as a percentage of the total in		Percentage rate of increase in the decade.
		1891.	1901.	
250,000 and over	9	24·4	24·5	12·5
Over 100,000 and under 250,000	24	7·9	10·2	44·6
„ 50,000 „ 100,000	42	9·7	9·9	14·1
„ 20,000 „ 50,000	141	12·8	13·6	19·5
„ 10,000 „ 20,000	219	8·9	9·2	17·2
„ 3,000 „ 10,000	472	9·6	8·3	− 3·5
Under 3,000	215	1·7	1·3	−12·9
Total urban	....	75·0	77·0	....
Total rural	....	25·0	23·0	2·9
Grand totals	....	100·0	100·0	....

TABLE III.—*Showing the population in thousands in twenty-four towns at various times from* 1085 *to* 1908.

1.

Barrow-in-Furness.

Year.	Population.
1837	0·1
'46	0·3
'64	13·0
'71	18·8
'91	51·7
1901	57·6
'06	68·8

2.

Barry.

Year.	Population.
1881	1·2
'91	13·4
1901	27·6
'07	32·5

3.

Birmingham.

Year.	Population.
1085	2·0
1685	4·0[23]
1760	28·0[24]
or	30·0[25]
1801	71·0
'21	102·0
'41	183·0
'61	296·0
'71	343·7
'81	400·7
'91	478·1
1901	522·2

4.

Bradford.

Year.	Population.
1801	13·0
'21	26·0
'41	67·0
'61	106·0
'71	145·8
'81	180·4
'91	265·7
1901	279·8

5.

Brighton.

Year.	Population.
1801	7·0
'21	25·0
'41	49·0
'61	87·0
'71	103·8
'81	128·4
'91	115·9
1901	123·5

6.

Bristol.[26]

Year.	Population.
1377	9·2[27]
1607	10·5
'85	29·0
1760	100·0[25]
'76	80·0
1801	61·0
'21	85·0
'41	125·0
'61	154·0
'71	182·5
'81	206·5
'91	289·3
1901	328·9

7.

Burnley.[28]

Year.	Population.
1311	0·3
1650	0·3
1801	4·8
'11	6·6
'21	10·0
'31	12·2
'41	17·5
'51	24·7
'61	34·4
'71	40·8
'81	58·9
'91	87·0
1901	97·0

8.

Cardiff.

Year.	Population.
1851	18·3
'61	32·9
'71	56·9
'81	82·7
'91	128·9
1901	164·3

9.

Hull.

Year.	Population.
1760	20·0
or	24·0[25]
1801	30·0
'21	45·0
'41	67·0
'61	97·0
'71	121·6
'81	161·5
'91	200·5
1901	240·6

10.

Leeds.

Year.	Population.
1685	7·0
1775	17·1
1801	53·0
'21	84·0
'41	152·0
'61	207·2
'71	259·2
'81	309·1
'91	367·5
1901	428·9

11.

Leicester.

Year.	Population.
1377	3·2[27]
1801	16·9
'11	23·1
'21	30·1
'31	38·9
'41	50·8
'71	95·2
'81	122·4
'91	174·6
1901	211·6

12.

Liverpool.[29]

Year.	Population.
1207	0·5
1350	1·2
1565	0·7
'90	1·0
1644	2·0
'85	4·0[23]
'99	5·1
1700	5·0
'20	10·4
'50	18·0
'60	25·0
'76	30·0[25]
or	34·0[30]
or	40·0[22]
'81	35·0
'91	50·0
'92	60·0
1801	77·7
'11	94·0
'21	118·0
'31	165·0
'41	286·0
'51	365·0
'61	443·9
'71	493·3
'81	552·4
'91	629·5
1901	685·0

Small figures (22) are reference numbers.
Clarendon figures (**10**) give order of the tables.

TABLE III.—*Populations in thousands in twenty-four towns—Contd.*

13.

London.

Year.	Population.
1377	35·2[27]
1603	250·0
'66	460·0[31]
'85	400·0
'96	530·0[15]
1769	1,416·0
1801	959·3
'11	1,139·3
'21	1,379·5
'31	1,655·6
'41	1,949·3
'51	2,363·3
'61	2,808·5
'71	3,261·4
'81	3,830·3
'91	4,228·3
1901	4,536·5

14.

Manchester.[32]

1685	6·0
1724	12·0
'57	20·0
'60	30·0
'74	41·0
1801	77·0
'21	129·0
'41	243·0
'51	303·4
'61	338·7
'71	351·2
'81	341·4
'85	373·6
'90	462·3
'91	505·4
1901	543·9
'04	606·8
'08	649·2

15.

Newcastle-on-Tyne.

Year.	Population.
1377	4·3[27]
1801	28·4
'11	27·6
'21	35·2
'31	42·8
'41	69·4
'51	87·8
'61	109·1
'71	128·2
'81	145·2
'91	186·0
1901	215·0

16.

Norwich.

1085	1·3
1377	6·3
1685	28·0
1760	40·0
or	60·0[25]
1821	50·3
'31	61·1
'51	68·7
'61	74·9
'71	80·4
'81	87·8
'91	101·0
1901	111·7

17.

Nottingham.

1685	8·0
1760	17·7[33]
1801	28·9
'11	34·2
'21	40·4
'31	50·7
'41	52·0
'51	57·4
'61	74·7
'71	86·6
'81	111·6
'91	213·9
1901	239·7

18.

Sheffield.

Year.	Population.
1685	4·0
1760	20·0[25]
or	30·0
1801	46·0
'21	65·0
'41	111·0
'61	185·0
'71	239·9
'81	284·4
'91	324·2
1901	380·8

19.

Southport.

1809	0·1
'46	3·9
'51	4·8
'61	10·1
'71	18·1
'81	32·2
'91	41·4
1901	48·1

20.

Swindon.

1871	11·5
'81	20·0
'91	32·8
1901	45·0

21.

Wallasey.

Year.	Population.
1801	0·7
'11	0·9
'21	1·2
'31	2·7
'41	6·3
'51	8·3
'61	10·7
'71	14·9
'81	21·2
'91	33·1
1901	54·6
'08	70·0

22.

Warrington.[34]

1085	0·3
1847	22·0
'91	55·3
1901	64·2

23.

Worcester.

1685	8·0
1760	11·5
1881	40·4
'91	42·9
1901	46·6

24.

York.

1377	11·4
1685	10·0
1881	59·6
'91	67·7
1901	77·8

TABLE IV.—*Showing the area within the municipal limits and in the water supply districts at various times.*

Town or district.	Year.	Area in square miles			Population in thousands		
		Within the municipal boundaries.	Supplied with water		Within the municipal boundaries	Supplied with water	
			Outside the municipal boundaries.	Total.		Outside the municipal boundaries.	Total.
Birmingham	1891	14·7	....	....	....	....	....
	'96	19·8	112·5	132·3	450·3	152·4	602·7
	1906	19·8	112·5	132·3	508·8	271·2	780·0
Bradford	1897	16·8	101·7	118·5	231·3	205·0	436·3
	1908	....	....	....	298·0	152·0	450·0
Derby	1848	2·8	1·1	3·9	....	....	....
	'80	5·4	23·4	28·8	....	....	....
	1909	8·2	30·0	38·2	124·0	3·8	127·8
Halifax	1897	12·8	95·3	108·1	87·0	130·0	217·0
	1908	21·3	....	....	108·0	120·0	228·0
Huddersfield	1897	18·5	62·4	80·9	....	37·9	146·9
	1907	19·0	....	....	95·0	57·0	152·0
Hull	1896	13·2	10·8	24·0	220·6	3·5	224·1
	1906	14·4	11·2	+25·6	240·3	6·1	246·4
Liverpool	1300	0·1	....	....	....	....	....
	1699	0·3	....	....	....	....	....
	1835	20·7	....	....	....	....	....
	'96	20·7	87·9	108·6	641·0	149·0	790·0
	1902	23·3	....	....	....	....	....
	'05	27·8	....	....	739·2	167·6	906·8
London	1200	0·3	....	....	....	....	....
	1560	2·5	....	....	....	....	....
	1745	6·0	....	....	....	....	....
	1818	9·7	....	....	....	....	....
	'34	29·7	....	....	....	....	....
	'67	73·6	....	....	....	....	....
	1908	116·9	....	537·4	....	....	....
Manchester	1841	6·7	....	....	243·0	....	....
	'85	9·3	....	....	....	....	....
	'90	20·2	....	....	....	....	....
	'97	20·2	69·8	90·0	529·6	319·5	849·1
	1904	31·1	....	....	606·8	....	....
	'08	31·1	207·1	238·2	649·3	600·7	1,250·0
Newport (Mon.)	1847	1·5	....	....	....	....	....
	'88	4·3	1·8	6·1	....	....	....
	'97	7·7	3·7	11·4	69·0	3·4	72·4
	1908	7·8	3·6	11·4	....	....	87·8
St. Helens	1880	10·3	8·6	18·9	....	....	56·0
	'97	11·4	7·5	18·9	82·9	2·1	85·0
	1908	11·4	7·5	18·9	90·0	8·0	98·0
Sheffield	1897	30·7	94·3	125·0	....	....	415·0
	1906	37·0	....	....	447·9	29·5	477·4
Torquay	1884	6·1	6·5	12·6	....	....	....
	1908	6·1	6·5	12·6	33·6	19·4	53·0

TABLE V.—*Showing the increase in the consumption of water in England and Wales.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
Aberdare U.D.C.	1902	48 ·0	350 ·0	—	—	—	—	19 ·98	19 ·98	—	—
	'06	50 ·0	401 ·5	—	—	—	—	22 ·00	—	—	—
Alton U.D.C.	'02	4 ·5	49 ·9	42 ·7	*	7 ·2	—	30 38	26 ·00	*	4 ·38
	'06	5 ·0	60 ·0	47 ·4	*	12 ·6	—	32 ·87	26 ·00	*	6 ·87
Ashford U.D.C.	'02	12 ·8	54 ·7	—	—	—	—	11 ·72	—	—	—
	'06	13 ·4	63 ·1	—	—	—	—	12 ·90	—	—	—
Bakewell U.D.C.	'02	2 ·8	30 ·7	30 ·7	—	—	—	30 ·00	30 ·00	—	—
	'06	3 ·0	37 ·0	33 ·0	3 ·1	0 ·9	—	33 ·79	30 ·14	2 ·83	0 ·82
Banbury W. Co.	'02	13 ·0	115 ·0	80 ·5	34 ·5	—	—	24 ·30	17 ·00	7 ·30	—
	'06	13 ·0	124 ·0	76 ·6	47 ·4	—	—	26 ·13	16 ·13	10 ·00	—
Bangor Corp.	'02	11 ·7	—	—	—	—	—	—	—	—	—
	'06	13 ·1	138 ·5	109 ·8	28 ·7	—	—	29 ·00	23 ·00	6 ·00	—
Barnsley T.C.	'02	96 ·0	547 ·0	455 ·5	91 ·5	—	—	15 ·61	13 ·00	2 ·61	—
	'06	110 ·0	700 ·0	521 ·9	178 ·1	—	—	17 ·43	13 ·00	4 ·43	—
Barrow - in - Furness Corp.	1897	65 ·3	815 ·1	—	—	—	—	35 ·46	—	—	—
	1902	75 ·2	1,278 ·6	612 ·1	559 ·9	106 ·6	—	46 ·58	22 ·30	20 ·40	3 ·88
	'06	76 ·9	1,334 ·2	611 ·9	572 ·6	149 ·7	—	47 ·53	21 ·80	20 ·40	5 ·33
Barry U.D.C.	'01	28 ·5	227 ·0	202 ·0	25 0	†	—	21 ·82	19 ·42	2 ·40	†
	'06	32 ·5	268 ·0	237 ·2	30 8	†	—	22 ·59	20 ·00	2 ·59	†

* In domestic. † In trade.

NOTE.—U.D.C. is an abbreviation for Urban District Council.
Corp. ,, Corporation.
T.C. ,, Town Council.
G. and W. Co. ,, Gas and Water Company.
W. Co. is an abbreviation for Water Company,
W. W. Co. ,, Water Works Co.
J. B. ,, Joint Board.
W. B. ,, Water Board.

TABLE V.—*Showing the increase in the consumption of water in England and Wales—Contd.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
Basingstoke Corp.	1902	10·0	125·5	80·3	43·8	1·4	—	34·40	22·00	12·00	0·04
	'06	11·0	145·0	92·3	52·2	0·5	—	36·11	23·00	13·00	0·01
Batley Corp.	'02	30·6	430·0	180·0	240·0	10·0	—	38·50	16·12	21·49	0·89
	'06	31·3	450·0	185·0	250·0	15·0	—	39·39	16·19	21·88	1·32
Bilston U.D.C.	'02	32·6	260·6	218·5	42·1	*	—	21·87	18·34	3·53	*
	'06	34·3	291·8	224·4	67·5	†	—	23·31	17·92	5·39	†
Birkenhead Corp.	1897	103·0	973·6	—	—	—	—	25·90	—	—	—
	1906	110·5	1,324·0	—	—	—	—	32·81	22·75	10·06	—
Birmingham Corp.	1893	567·4	—	—	—	—	—	25·75	17·00	8·75	†
	'95	584·8	5,251·2	3,993·9	1,257·3	†	—	24·60	18·71	5·89	†
	'96	680·1	5,794·0	—	—	—	—	23·33	—	—	—
	1901	700·6	5,973·6	3,572·4	2,401·2	—	—	23·36	13·97	9·39	†
	'02	725·6	6,785·2	5,153·3	1,343·2	288·7	—	25·62	19·46	5·07	1·09
	'06	780·0	6,559·8	3,687·0	2,872·8	—	—	23·04	12·95	10·09	—
	'07	800·2	7,810·0	—	—	—	—	26·74	—	—	—
Blackburn Corp.	'02	130·0	1,254·0	793·4	460·6	—	—	26·43	16·72	9·71	—
	'06	134·4	1,240·4	676·0	564·4	—	—	25·27	13·78	11·49	—
Blaydon U.D.C.	'01	19·3	82·1	—	—	—	—	11·45	—	—	—
	'06	22·5	120·3	—	—	—	—	14·37	—	—	—
Bolton Corp.	1897	250·0	2,007·5	—	—	—	—	22·00	—	—	—
	1901	265·0	2,320·0	1,475·0	700·0	10·0	135·0‡	23·99	15·25	7·24	1·50
	'02	273·0	2,190·0	—	—	—	—	21·98	—	—	—

* In domestic. † In trade. ‡ Distributed amongst other totals.

TABLE V.—*Showing the increase in the consumption of water in England and Wales—Contd.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
Boston W. W. Co.	1902	19 ·6	100 ·0	—	—	—	—	14 ·00	12 ·00	2 ·00	—
	'06	20 ·0	110 ·0	88 ·3	21 ·9	—	—	15 ·10	12 ·10	3 ·00	—
Bournemouth G. and W. Co.	'02	80 ·9	759 ·0	—	—	—	—	25 ·70	—	—	—
	'06	81 ·0	785 ·0	—	—	—	—	26 ·55	—	—	—
Bradford Corp.	1871	—	2,920 ·0	—	—	—	—	—	—	—	—
	'81	—	3,650 ·0	—	—	—	—	—	—	—	—
	'91	—	4,015 ·0	—	—	—	—	—	—	—	—
	'97	436 ·3	4,048 ·2	—	—	—	—	25 ·42	—	—	—
	1901	—	4,380 ·0	—	—	—	—	45 ·10	24 ·70	20 ·40	—
	'06	450 ·0	—	—	—	—	—	40 ·30	19 ·80	20 ·50	—
	'08	—	4,745 ·0	—	—	—	—	—	—	—	—
Bridgend G. and W. Co.	'01	6 ·1	69 ·9	61 ·5	5 ·8	0 ·8	1 ·8	31 ·64	27 ·82	2 ·62	0 ·36
	'06	6 ·7	102 ·0	—	—	—	—	41 ·83	—	—	—
Brighouse Corp.	'01	21 ·7	141 ·1	80 ·6	60 ·5	†	—	17 ·79	10 ·16	7 ·63	—
	'06	22 ·2	180 ·1	91 ·4	88 ·7	†	—	22 ·18	11 ·26	10 ·92	—
Brighton Corp.	1897	165 ·0	2,142 ·5	—	—	—	—	35 ·57	—	—	—
	1906	180 ·0	2,302 ·0	1,776 ·4	525 ·6	—	—	35 ·04	27 ·04	8 ·00	—
Brompton, Chatham, Gillingham, and Rochester W. W. Co.....	'01	105 ·9	580 ·0	—	—	—	—	15 ·00	—	—	—
	'06	137 ·0	750 ·0	—	—	—	—	15 ·00	—	—	—
Burnley Corp.	1897	104 ·4	836 ·5	—	—	—	—	21 ·94	—	—	—
	1906	104 ·0	932 ·0	743 ·3	188 ·7	—	—	24 ·55	19 ·58	4 ·97	—

† In trade.

TABLE V.—*Showing the increase in the consumption of water in England and Wales—Contd.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
Cardiff Corp.	1901	195 ·0	1,752 ·0	1,108 ·0	525 ·0	101 ·0	18 ·0	24 ·61	15 ·57	7 ·38	1 ·41
	'06	218 ·0	2,060 ·9	1,109 ·4	951 ·5	†	†	25 ·90	13 ·94	11 ·96	†
Carlisle Corp.	'02	50 ·0	508 ·4	—	—	—	—	28 ·42	19 ·15	9 ·27	†
	'06	53 ·0	505 ·4	—	—	—	—	26 ·12	17 ·06	9 ·06	†
Chester W. W. Co.	'02	50 ·2	660 ·0	—	—	—	—	36 ·00	—	—	—
	'06	53 ·0	685 ·0	—	—	—	—	35 ·40	24 ·40	11 ·00	—
Colchester Corp.	'02	41 ·0	241 ·6	—	—	—	—	16 ·14	—	—	—
	'06	43 ·0	282 ·9	—	—	—	—	18 ·02	—	—	—
Colne Valley W. Co.	'02	60 ·0	686 ·0	—	—	—	—	31 ·33	24 ·00	—	—
	'06	82 ·0	900 ·0	—	—	—	—	30 ·10	24 ·00	—	—
Coventry Corp.	1897	60 ·1	526 ·3	—	—	—	—	24 ·03	—	—	—
	1902	71 ·0	610 ·0	—	—	—	—	23 ·54	—	—	—
	'06	87 ·0	703 ·0	—	—	—	—	22 ·14	18 ·14	4 ·00	—
Deal and Walmer J. B.	'02	14 ·0	122 ·4	—	—	—	—	23 ·95	—	—	—
	'06	18 ·6	172 ·2	—	—	—	—	25 ·36	19 ·36	6 ·00	—
Derby Corp.‡	1853	18 ·8	166 ·0	139 ·6	26 ·4	†	—	24 ·14	20 ·29	3 ·85	†
	'56	29 ·4	237 ·1	203 ·6	33 ·4	†	—	22 ·05	18 ·94	3 ·11	†
	'61	37 ·0	326 ·6	287 ·2	39 ·4	†	—	24 ·17	21 ·25	2 ·82	†
	'66	42 ·8	346 ·7	273 ·7	73 ·0	†	—	22 ·17	17 ·50	4 ·67	†
	'71	50 ·4	482 ·3	370 ·7	111 ·6	†	—	26 ·19	20 ·13	6 ·06	†
	'76	58 ·8	618 ·3	494 ·7	123 ·6	†	—	28 ·81	23 ·05	5 ·76	†
	'81	75 ·9	690 ·7	485 ·3	205 ·4	†	—	24 ·92	17 ·51	7 ·41	†

† In trade.

‡ Purchased by Corp. in 1880.

TABLE V.—*Showing the increase in the consumption of water in England and Wales—Contd.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
Derby Corp. (*contd.*)	1886	92 ·1	723 ·6	505 ·1	218 ·5	†	—	21 ·53	15 ·03	6 ·50	†
	'91	102 ·2	723 ·8	467 ·9	255 ·9	†	—	19 ·40	12 ·54	6 ·86	†
	'96	109 ·3	936 ·6	638 ·5	298 ·1	†	—	23 ·47	16 ·00	7 ·47	†
	1901	125 ·1	939 ·7	555 ·0	384 ·7	†	—	20 ·57	12 ·15	8 ·42	†
	'06	125 ·4	1,051 ·0	664 ·7	386 ·3	†	—	22 ·96	14 ·52	8 ·44	†
	'08	127 ·8	1,146 ·6	764 ·1	382 ·5	†	—	24 ·58	16 ·38	8 ·20	†
Devonport Corp.‡	'02	69 ·7	762 ·9	—	—	—	—	30 ·00	19 ·00	11 ·00	—
	'06	70 ·0	819 ·3	—	—	—	—	32 ·06	19 ·45	12 ·61	—
Doncaster Corp.	'02	41 ·3	362 ·8	294 ·2	18 ·6	50 ·0	—	24 ·07	19 ·52	4 ·55	—
	'06	44 ·4	344 ·5	—	—	—	—	21 ·75	21 ·02	0 ·73	—
Dorking W. Co.	'02	9 ·9	81 ·0	—	—	—	—	23 ·30	—	—	—
	'06	14 ·4	103 ·0	—	—	—	—	19 ·60	—	—	—
Dover Corp.	'01	41 ·8	432 ·5	301 ·0	111 ·5	20 ·0	—	28 ·35	19 ·72	7 ·31	1 ·32
	'06	43 ·6	446 ·3	348 ·3	78 ·0	20 ·0	—	28 ·04	21 ·85	4 ·90	2 ·29
	'07	45 ·0	445 ·0	362 ·0	71 ·0	12 ·0	—	27 ·09	22 ·04	4 ·32	0 ·73
East Surrey W. Co.....	'01	75 ·0	555 ·0	—	—	—	—	20 ·27	—	—	—
	'07	81 ·0	764 ·0	—	—	—	—	25 ·84	—	—	—
Ebbw Vale U.D.C.	'02	22 ·0	144 ·5	—	—	—	—	18 ·00	—	—	—
	'06	40 ·0	215 ·0	—	—	—	—	14 ·72	—	—	—
Ely U.D.C.	'02	9 ·8	60 ·5	—	—	—	—	16 ·95	—	—	—
	'06	9 ·9	71 ·3	—	—	—	—	19 ·73	—	—	—
Exeter Corp.	'02	60 ·0	700 ·0	—	—	—	—	31 ·96	—	—	—
	'06	61 ·0	720 ·0	—	—	—	—	32 ·34	—	—	—

† In trade. ‡ Devonport W. Co. previous to 1906.

TABLE V.—*Showing the increase in the consumption of water in England and Wales—Contd.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
Exmouth U.D.C.	1901	10 ·4	119 ·6	—	—	—	—	31 ·57	—	—	—
	'06	11 ·3	100 ·7	95 ·0	3 ·7	2 ·0	—	24 ·31	22 ·93	0 ·90	0 ·48
Faversham W. Co.	'01	12 ·0	74 ·0	—	—	—	—	16 ·89	—	—	—
	'06	13 ·9	102 ·4	—	—	—	—	20 ·18	18 ·30	1 ·88	—
Filey U.D.C........	'01	3 ·2	37 ·4	35 ·0	0 ·9	0 ·6	0 ·9	31 ·55	29 ·50	0 ·76	0 ·53
	'06	3 ·4	41 ·0	—	—	—	—	33 ·04	—	—	–
Folkestone W. W. Co.	'00	29 ·9	333 ·4	295 ·8	24 ·4	13 ·2	—	30 ·55	27 ·10	2 ·24	1 ·21
	'02	31 ·3	361 ·1	305 ·5	19 ·5	36 ·1	—	31 ·61	26 ·74	1 ·71	3 ·16
	'04	33 ·7	388 ·6	322 ·5	19 ·6	46 ·5	—	31 ·59	26 ·22	1 ·59	3 ·78
	'06	35 ·5	360 ·1	286 ·7	26 ·1	47 ·3	—	27 ·79	22 ·13	2 ·01	3 ·65
	'08	35 ·6	424 ·3	365 ·7	29 ·3	29 ·3	—	32 ·67	28 ·16	2 ·25	2 ·26
Frimley and Farnborough District W. Co.	1902	15 ·0	160 ·6	126 ·0	20 ·0	2 ·6	12 ·0	29 ·33	23 ·01	3 ·65	0 ·47
	'06	26 ·0	268 ·0	185 ·0	60 ·0	5 ·0	18 ·0	28 ·24	19 ·49	6 ·32	0 ·53
Frome U.D.C.	'02	11 ·0	114 ·0	—	—	—	—	—	—	—	—
	'06	12 ·0	124 ·5	—	—	—	—	—	—	—	—
Gainsborough U.D.C.	'02	20 ·0	182 ·5	—	—	—	—	25 ·00	—	—	—
	'06	21 ·1	258 ·7	—	—	—	—	33 ·50	23 ·00	10 ·50	—
Gloucester Corp.	1897	43 ·0	281 ·0	—	—	—	—	17 ·90	—	—	—
	1901	53 ·0	400 ·0	—	—	—	—	20 ·68	15 ·50	3 ·00	2 ·18
	'06	56 ·0	408 ·8	—	—	—	—	20 ·00	15 ·00	3 ·00	2 ·00
Godalming T.C.	'02	11 ·0	139 ·9	131 ·0	5 ·0	3 ·9	—	34 ·83	32 ·63	1 ·24	0 ·96
	'06	12 ·6	150 ·0	—	—	—	—	32 ·61	27 ·50	5 ·11	—
Gosport W. W. Co.....	'02	30 ·0	181 ·8	—	—	—	—	16 ·60	—	—	—
	'06	30 ·5	257 ·0	238 ·0	12 ·0	7 ·0	—	23 ·08	21 ·38	1 ·07	0 ·63

TABLE V.—*Showing the increase in the consumption of water in England and Wales—Contd.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
Great Berkhamsted W. W. Co.	1902	8·7	65·7	—	—	—	—	20·62	—	—	—
	'06	9·0	109·5	—	—	—	—	33·33	—	—	—
Great Grimsby W. W. Co.	'02	77·0	1,021·0	—	—	—	—	36·33	—	—	—
	'06	90·0	1,231·0	—	—	—	—	33·73	—	—	—
Guildford T.C.	'00	20·0	173·8	—	—	—	—	27·00	—	—	—
	'06	21·0	232·4	148·3	12·7	23·0	48·3	30·32	18·98	1·66	3·00
Halifax Corp.	1897	217·0	1,577·0	—	—	—	—	19·91	—	—	—
	1906	228·0	1,760·2	—	—	—	—	21·15	—	—	—
Harpenden W. W. Co.	'02	4·7	18·0	—	—	—	—	10·49	—	—	—
	'06	5·1	38·5	—	—	—	—	20·68	—	—	—
Harrogate Corp.	'01	31·1	451·0	361·0	90·0	†	*	39·73	31·80	7·93	†
	'06	49·2	569·8	—	—	—	—	31·70	23·40	8·30	†
Hartlepool G. and W. Co.	1875	44·0	554·0	256·0	298 0	—	—	34·49	15·94	18·55	—
	'99	89·0	1,247·0	722·0	525·0	—	—	38·38	22·23	16·15	—
	1904	92·5	1,359·0	740·0	619·0	—	—	40·25	21·92	18·33	—
Hastings Corp.	'02	75·0	440·0	—	—	—	—	16·07	—	—	—
	'06	85·0	560·0	—	—	—	—	18·05	—	—	—
Henley-on-Thames W. Co.	'01	6·0	78·6	74·6	1·6	2·4	—	35·89	34·06	0·74	1·09
	'06	6·5	91·7	85·4	3·0	3·3	—	38·65	36·00	1·26	1·39
Hinckley U.D.C.	'01	11·5	56·1	40·4	14·3	1·4	—	13·35	9·61	3·41	0·33
	'06	12·0	72·9	50·8	20·6	1·5	—	16·63	11·59	4·70	0·34

* In domestic. † In trade.

TABLE V.—*Showing the increase in the consumption of water in England and Wales—Contd.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
Hucknall Huthwaite U.D.C.	1901	4 ·0	11 ·5	11 ·3	0 ·2	—	—	7 ·78	7 ·60	0 ·18	—
	'07	4 ·5	13 ·5	13 ·3	0 ·2	—	—	8 ·22	8 ·10	0 ·12	—
Hull Corp.	1893	196 ·0	3,110 ·7	—	369 ·2	—	0 ·4	43 ·48	—	5 ·16	—
	'96	223 ·7	3,211 ·6	—	481 ·5	—	1 ·3	39 ·20	—	5 ·90	—
	1901	246 ·0	3,377 ·3	2,557 ·3	752 ·5	55 ·0	12 ·5	37 ·61	28 ·48	8 ·38	0 ·61
	'03	254 ·0	3,330 ·8	—	771 ·3	—	16 ·1	35 ·75	—	8 ·32	—
	'06	267 ·5	3,490 ·1	2,593 ·2	818 ·5	55 ·0	23 ·4	35 ·50	26 ·56	8 ·38	0 ·56
Ipswich Corp.	1891	51 ·8	426 ·8	364 ·3	50 ·3	12 ·2	—	22 ·57	19 ·27	2 ·66	0 ·64
	'96	57 ·8	386 ·0	271 ·7	79 ·3	15 ·1	—	18 ·30	12 ·88	3 ·76	1 ·66
	1901	65 ·6	524 ·1	397 ·1	109 ·3	17 ·7	—	21 ·89	16 ·59	4 ·56	0 ·74
	'07	73 ·4	544 ·3	411 ·1	116 ·4	16 ·9	—	20 ·32	15 ·34	4 ·34	0 ·64
King's Lynn Corp.	'02	20 ·3	237 ·2	—	—	—	—	32 ·04	—	—	—
	'06	21 ·3	250 ·0	—	—	—	—	32 ·17	—	—	—
Knaresborough U.D.C.	'02	5 ·0	45 ·6	—	—	—	—	25 ·00	—	—	—
	'06	5 ·5	54 ·1	—	—	—	—	26 ·92	25 ·80	1 ·12	—
Leamington Corp.	'02	28 ·0	214 ·0	—	—	—	—	20 ·94	—	—	—
	'06	29 ·0	216 ·4	—	—	—	—	23 ·27	—	—	—
Leeds Corp.	1896	420 ·0	5,473 ·2	—	—	—	—	35 ·70	—	—	—
	1902	430 ·0	5,691 ·2	—	—	—	—	36 ·26	24 ·50	11 ·00	0 ·76
	'06	463 ·4	5,870 ·1	—	—	—	—	34 ·70	21 ·80	12 ·10	0 ·80
Leicester Corp.	1878	100 ·2	1,012 ·1	—	—	—	—	27 ·68	—	—	—
	'96	220 ·0	1,445 ·4	—	—	—	—	18 ·00	—	—	—
	1901	243 ·9	1,858 ·2	1,311 ·0	469 ·7	77 ·6	—	20 ·87	14 ·72	5 ·27	0 ·87
	'06	270 ·5	1,582 ·5	1,074 ·5	450 ·3	57 ·7	—	16 ·03	10 ·89	4 ·56	0 ·58

TABLE V.—*Showing the increase in the consumption of water in England and Wales—Contd.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
Lewes W. W. Co.	1901	11·3	136·8	96·5	36·4	3·9	—	33·03	23·30	8·78	0·95
	'06	12·6	150·0	109·4	34·7	5·9	—	32·68	23·84	7·55	1·29
Lincoln Corp.	1897	52·0	445·8	—	—	—	—	23·51	—	—	—
	1901	53·6	542·1	405·8	111·2	25·1	—	27·71	20·74	5·68	1·29
	'07	58·0	623·5	497·2	101·1	25·1	—	29·45	23·49	4·77	1·19
Liverpool Corp.	1800*	77·5	36·5	—	—	—	—	1·30	—	—	—
	'46	339·1	1,020·0	—	—	—	—	8·24	—	—	—
	'51	420·1	1,648·5	—	—	—	—	10·75	—	—	—
	'61	504·1	5,281·7	—	—	—	—	28·70	—	1·60	—
	'71	594·1	6,366·6	—	—	—	—	29·36	—	—	—
	'81	704·3	6,387·6	—	—	—	—	24·84	—	5·07	—
	'91	748·7	6,901·4	—	—	—	—	25·25	—	—	—
	'99	818·7	9,315·5	—	—	—	—	31·17	17·89	10·00	3·28
	1902	850·0	9,731·6	—	—	—	—	31·37	—	—	—
	'06	906·8	10,801·0	—	—	—	—	32·63	—	—	—
London Companies†	1820	966·0	8,589·5	—	—	—	—	24·36	—	—	—
	'50	2,174·0	16,753·5	—	—	—	—	21·11	—	—	—
	'57	2,605·0	27,192·5	—	—	—	—	28·60	23·50	3·10	—
	'81	3,815·0	41,792·0	—	—	—	—	30·01	26·01	4·00	—
	'84	4,272·0	48,727·5	—	—	—	—	31·25	—	—	—
	'96	5,607·2	72,265·6	—	—	—	—	35·31	—	—	—
	'98	5,814·2	74,479·7	—	—	—	—	35·10	—	—	—
	1900	5,953·5	76,650·0	—	—	—	—	35·27	28·22	7·05	—
	'02	6,379·4	77,200·1	—	—	—	—	33·15	26·52	6·63	—

* Supplies hawked from about 60 water carts. Companies formed 1799 and 1822. Purchased by Corporation 1847.

† Companies formed at various times between 1619 and 1845, and transferred to the Metropolitan Water Board in 1904.

TABLE V.—*Showing the increase in the consumption of water in England and Wales—Contd.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
London (*contd.*) Metropolitan W.B.	1904	6,490·3	80,201·6	—	—	—	—	33·54	26·83	6·71	—
	'05	6,747·2	79,572·6	—	—	—	—	32·31	25·85	6·46	—
	'06	6,851·0	82,125·2	—	—	—	—	32·84	26·27	6·57	—
Luton W. Co.	'02	36·4	304·0	—	—	—	—	22·88	—	—	—
	'06	42·4	411·4	—	—	—	—	26·58	—	—	—
Malton U.D.C.............	'02	4·8	60·6	—	—	—	—	34·90	—	—	—
	'06	4·9	67·8	—	—	—	—	38·00	35·00	3·00	—
Manchester Corp.‡	1845	—	1,095·0	—	—	—	—	—	—	—	—
	'55	—	2,948·5	—	—	—	—	—	—	—	—
	'61	—	3,911·4	—	—	—	—	—	—	—	—
	'71	—	5,508·2	—	—	—	—	—	—	—	—
	'81	—	6,909·3	—	—	—	—	—	—	—	—
	'85	—	7,172·5	—	—	—	—	—	—	—	—
	'90	—	8,216·2	—	—	—	—	—	—	—	—
	'91	—	8,632·0	—	—	—	—	—	—	—	—
	1901	1,100·0	11,050·6	—	—	—	—	27·52	—	—	—
	'04	—	12,043·0	—	—	—	—	—	—	—	—
	'08	1,250·0	14,615·2	—	—	—	—	32·03	—	—	—
Margate Corp.............	'02	26·5	278·7	—	—	—	—	28·81	—	—	—
	'06	36·0	382·5	—	—	—	—	29·11	—	—	—
Newhaven and Seaford W. Co.	'02	11·0	64·6	—	—	—	—	16·09	—	—	—
	'06	12·0	84·0	—	—	—	—	19·18	—	—	—

‡ Works of the Manchester and Salford Water Works Co. purchased by the Corporation in 1847.

TABLE V.—*Showing the increase in the consumption of water in England and Wales—Contd.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
Newport Corp.	1888	—	428 ·7	—	—	—	—	—	—	—	—
	'91	61 ·0	459 ·8	—	—	—	—	20 ·65	—	—	—
	'95	69 ·0	638 ·2	—	—	—	—	25 ·34	—	—	—
	1901	73 ·6	661 ·8	—	—	—	—	24 ·62	—	—	—
	'05	81 ·4	767 ·7	453 ·9	313 ·8	—	—	25 ·85	15 ·28	10 ·57	—
	'08	87 ·8	898 ·7	556 ·3	342 ·4	—	—	28 ·03	17 ·35	10 ·68	—
Nottingham Corp.	1897	272 ·8	1,979 ·0	—	—	—	—	19 ·88	—	—	—
	1902	301 ·0	2,223 ·0	—	—	—	—	19 ·65	—	—	—
	'07	340 ·0	2,744 ·9	—	—	—	—	22 ·10	11 ·48	10 ·62	—
Nuneaton Corp.	'02	25 ·0	110 ·0	—	—	—	—	10 ·96	—	—	—
	'06	28 ·8	181 ·3	—	—	—	—	17 ·27	12 ·52	4 ·75	—
Oswestry Corp.	'02	9 ·7	76 ·0	46 ·0	30 ·0	†	—	21 ·47	12 ·99	8 ·48	—
	'06	9 ·9	102 ·0	58 ·0	44 ·0	†	—	28 ·23	16 ·06	12 ·17	—
Peterborough Corp.	'01	34 ·0	479 ·0	315 ·5	*	150 ·0	13 ·5	38 ·60	25 ·42	*	12 ·09
	'06	34 ·8	546 ·0	365 ·5	*	150 ·0	30 ·5	42 ·98	28 ·78	*	11 ·89
Plymouth Corp.	1897	98 ·6	1,770 ·2	—	—	—	—	49 ·20	—	—	—
	1901	132 ·3	2,225 ·0	1,555 ·6	315 ·4	72 ·3	310 ·4	46 ·07	32 ·21	6 ·53	1 ·50
	'06	145 ·2	2,034 ·5	—	—	—	368 ·7	38 ·39	25 ·64	10 ·56	†
Poole Corp.	'02	27 ·0	119 ·7	—	—	—	—	12 ·15	—	—	—
	'06	29 ·4	170 ·5	141 ·2	17 ·9	11 ·4	—	15 ·91	13 ·18	1 ·67	1 ·06
Ramsgate Corp.	'02	35 ·0	434 ·1	364 ·5	43 ·9	25 ·7	—	33 ·97	28 ·53	3 ·43	2 ·01
	'06	38 ·3	424 ·8	364 ·9	33 ·1	26 ·8	—	30 ·41	26 ·12	2 ·37	1 ·92

* In domestic. † In trade.

TABLE V.—*Showing the increase in the consumption of water in England and Wales—Contd.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
Reading Corp.	1897	71·6	914·9	—	—	—	—	35·03	—	—	—
	1902	85·0	1,280·5	—	—	—	—	41·27	20·00	21·27	—
	'06	91·1	1,347·8	—	—	—	—	40·53	20·00	20·53	—
Rhyl U.D.C.	'02	16·5	143·0	—	—	—	—	23·75	20·50	3·25	—
	'06	17·0	175·5	145·0	30·5	†	—	28·28	23·37	4·91	—
Richmond (Surrey) Corp.	'02	27·5	316·0	—	—	—	—	31·48	—	—	—
	'06	34·4	395·0	—	—	—	—	31·50	—	—	—
Ripon Corp.	'02	8·2	74·8	—	—	—	—	25·00	—	—	—
	'06	9·0	86·4	—	—	—	—	26·30	—	—	—
Rotherham Corp.	'02	80·0	510·0	—	—	—	—	17·47	—	—	—
	'06	91·0	650·0	—	—	—	—	19·57	15·00	4·57	—
Rugby U.D.C.	'02	20·0	160·0	—	—	—	—	21·90	—	—	—
	'06	23·0	226·0	—	—	—	—	26·92	20·00	6·92	—
Saffron Walden Corp.	'02	5·9	39·0	—	—	—	—	18·11	—	—	—
	'06	6·0	43·0	—	—	—	—	19·63	—	—	—
St. Albans W. W. Co.	'02	—	193·3	—	—	—	—	—	—	—	—
	'06	22·0	236·5	—	—	—	—	29·45	25·00	4·45	—
St. Helens Corp.	1879	—	—	—	—	—	—	33·89	18·36	15·53	*
	'81	56·0	663·0	318·2	344·8	*	—	32·44	15·57	16·87	*
	'86	65·0	807·6	426·8	380·8	*	—	34·04	17·99	16·05	*
	'91	74·0	1,028·0	547·2	480·8	*	—	38·06	20·26	17·80	*
	'96	82·0	1,125·3	661·4	463·9	*	—	37·60	22·10	15·50	*
	1901	89·0	1,244·1	698·4	545·7	*	—	38·30	21·50	16·80	*
	'07	98·0	1,523·8	912·1	611·7	*	—	42·60	25·50	17·10	*
	'08	—	—	—	—	—	—	—	20·00	—	—

* In domestic. † In trade.

TABLE V.—*Showing the increase in the consumption of water in England and Wales —Contd.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
Scarborough Corp.	1866	—	164·4	—	—	—	—	—	—	—	—
	'71	—	209·7	—	—	—	—	—	—	—	—
	'76	27·4	263·1	—	—	—	—	26·35	—	—	—
	'81	30·6	318·6	—	—	—	—	28·54	—	—	—
	'86	32·2	340·5	—	—	—	—	28·99	—	—	—
	'91	33·9	403·0	—	—	—	—	32·60	—	—	—
	'96	36·0	407·9	—	—	—	—	31·04	—	—	—
	1901	38·3	505·1	—	—	—	—	36·15	—	—	—
	'06	40·7	474·9	378·4	96·5	†	—	32·00	25·49	6·51	†
	'08	41·2	477·1	386·3	90·7	†	—	31·76	25·71	6·05	†
Selby U.D.C.	'02	8·5	67·9	—	—	—	—	21·88	—	—	—
	'06	9·5	71·0	—	—	—	—	20·48	—	—	—
Sheffield Corp.	1897	415·0	2,718·9	—	—	—	—	17·95	—	—	—
	1902	429·5	4,158·5	2,211·0	1,305·7	132·0	509·9	23·27	14·10	8·33	0·84
	'06	477·4	4,710·2	1,915·9	1,478·8	193·3	1,092·2	20·76	11·16	8·49	1·11
Sleaford W. C.	'01	5·5	26·0	—	—	—	—	12·95	—	—	—
	'06	6·0	46·0	—	—	—	—	21·00	—	—	—
Slough W. W. Co.	'02	11·5	79·0	—	—	—	—	18·82	—	—	—
	'06	15·0	121·3	—	—	—	—	22·15	—	—	—
Southampton Corp.....	1897	76·4	1,049·8	—	—	—	—	37·63	—	—	—
	1901	76·8	1,373·9	852·4	370·0	151·5	—	49·01	30·41	13·20	5·40
	'06	80·0	1,164·6	751·1	329·6	83·9	—	39·88	25·72	11·29	2·87

† In trade.

TABLE V.—*Showing the increase in the consumption of water in England and Wales—Contd.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
South Hants W. Co.	1902	70·1	558·5	—	—	—	—	21·82	—	—	—
	'06	83·2	620·0	—	—	—	—	20·41	—	—	—
South Staffordshire W. W. Co.	'02	585·2	4,190·4	—	—	—	—	19·62	—	—	—
	'06	655·3	4,900·7	—	—	—	—	20·49	—	—	—
Stafford Corp.	1895	22·0	120·1	100·2	18·7	1·2	—	14·96	12·47	2·33	0·16
	1901	25·0	156·4	118·3	16·8	7·4	—	17·14	12·97	1·84	2·33
	'08	25·5	221·6	173·8	23·6	1·9	—	23·81	18·68	2·42	2·71
Staffordshire Potteries W. W. Co.	'02	280·0	2,000·0	—	—	—	—	19·57	—	—	—
	'06	310·0	2,810·0	—	—	—	—	24·83	20·00	4·83	—
Stamford W. W.........	'02	8·4	42·9	—	—	—	—	13·99	—	—	—
	'07	8·5	47·5	—	—	—	—	15·31	—	—	—
Stourbridge W. W. Co.	'01	30·0	304·3	279·8	24·5	—	—	27·79	25·55	2·24	—
	'06	35·0	559·5	522·2	37·3	—	—	43·80	40·88	2·92	—
Sutton District W. Co.	'02	45·7	460·5	422·0	25·1	13·4	—	27·58	25·28	1·50	0·80
	'06	60·0	641·2	—	—	—	—	29·28	—	—	—
Swansea Corp.............	1897	100·0	1,058·5	—	—	—	—	29·00	—	—	—
	1902	110·0	1,169·7	—	—	—	—	29·13	—	—	—
	'06	120·0	1,825·0	—	—	—	—	41·61	—	—	—
Tees Valley W. B.	1896	187·3	3,463·9	—	—	—	—	50·66	—	—	—
	1906	245·0	5,360·4	—	—	—	—	59·94	—	—	—
Tonbridge W. W. Co.	'01	17·6	123·5	109·0	3·0	2·5	9·0	19·22	16·97	0·47	0·39
	'07	21·3	171·0	165·0	4·5	1·5	—	22·00	21·23	0·58	0·19

TABLE V.—*Showing the increase in the consumption of water in England and Wales—Contd.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
Torquay Corp.	1901	51 ·0	596 ·0	461 ·7	94 ·0	37 ·9	2 ·4	32 ·02	24 ·80	5 ·05	2 ·03
	'06	52 ·0	532 ·2	492 ·2	**	39 ·9	—	28 ·04	25 ·93	**	2 ·11
	'08	53 ·0	653 ·2	613 ·3	12 ·7	27 ·1	—	33 ·76	31 ·70	0 ·66	1 ·40
Tunbridge Wells Corp.	'01	34 ·8	260 ·0	—	—	—	—	20 ·47	—	—	—
	'06	36 ·7	366 ·9	—	—	—	—	27 ·39	—	—	—
Tynemouth Corp.	'01	59 ·0	413 ·5	—	—	—	—	19 ·20	—	—	—
	'06	64 ·0	462 ·0	—	—	—	—	19 ·78	—	—	—
Uppingham W. W. Co.	'02	2 ·5	10 ·9	—	—	—	—	12 ·00	—	—	—
	'06	3 ·0	20 ·0	—	—	—	—	18 ·26	—	—	—
Wakefield Corp.	'02	138 ·0	885 ·5	284 ·7‡	213 ·9‡	†*	386 ·9	17 ·58	18 ·83‡	14 ·15‡	†*
	'06	148 ·7	948 ·6	262 ·3‡	225 ·6‡	†*	460 ·7	17 ·48	16 ·80‡	14 ·45‡	†*
Wallasey U.D.C.	1891	33 ·1	365 ·2	318 ·2	40 ·2	6 ·8	—	30 ·23	26 ·34	3 ·33	0 ·56
	'96	40 ·0	563 ·1	469 ·8	77 ·2	16 ·1	—	38 ·57	32 ·18	5 ·29	1 ·10
	1901	54 ·6	620 ·8	517 ·8	89 ·5	13 ·5	—	31 ·15	25 ·98	4 ·49	0 ·68
	'06	61 ·0	746 ·8	577 ·6	150 ·7	18 ·5	—	33 ·54	25 ·94	6 ·77	0 ·83
	'08	70 ·0	866 ·4	667 ·9	181 ·7	16 ·8	—	33 ·91	26 ·14	7 ·11	0 ·66
Warminster U.D.C.	'02	5 ·8	36 ·0	—	—	—	—	17 ·00	—	—	—
	'06	5 ·8	44 ·2	—	—	—	—	20 ·90	—	—	—
Warrington Corp.	'01	81 ·5	667 ·0	425 ·0	205 ·7	36 ·3	—	22 ·42	14 ·29	6 ·92	1 ·22
	'06	97 ·4	787 ·2	501 ·3	241 ·9	43 ·9	—	22 ·14	14 ·10	6 ·81	1 ·23
Weardale and Consett W. Co.	'02	292 ·3	2,240 ·4	—	—	—	—	21 ·00	11 ·00	10 ·00	—
	'06	320 ·3	2,317 ·1	—	—	—	—	19 ·82	10 ·45	9 ·37	—

** In municipal. ‡ City of Wakefield only. †* In trade and domestic.

TABLE V.—*Showing the increase in the consumption of water in England and Wales—Contd.*

Water supply authority.	Year.	Population, in thousands, in area of supply.	Annual supply, in millions of gallons.					Daily supply, in gallons, per head of population.			
			Total.	In area of supply.			In bulk to other authorities.	Total.	Domestic.	Trade.	Municipal.
				Domestic.	Trade.	Municipal.					
Whitehaven Corp.	1902	27·5	365·0	—	—	—	—	36·36	20·00	16·36	—
	'06	24·0	547·5	—	—	—	—	62·50	34·00	28·50	—
Winchester W. and G. Co.	'02	20·9	219·0	—	—	—	—	28·71	—	—	—
	'06	21·0	253·7	—	—	—	—	32·22	—	—	—
Wirral W. W. Co.	1885	5·3	171·1	170·5	0·6	—	—	88·14	87·83	0·31	—
	'91	5·8	233·8	233·4	0·4	—	—	109·89	109·70	0·19	—
	'96	6·4	335·8	335·5	0·3	—	—	143·98	143·85	0·13	—
	1901	6·6	301·8	272·7	29·1	—	—	124·53	112·51	12·02	—
	'08	8·1	266·5	260·0	6·5	—	—	89·92	87·72	2·19	—
Woking G. and W. Co.	'02	21·2	166·0	—	—	—	—	21·45	—	—	—
	'06	35·0	261·5	—	—	—	—	20·47	—	—	—
Wolverhampton Corp.	'02	136·0	1,087·0	—	—	—	—	21·90	—	—	—
	'06	152·0	1,200·0	—	—	—	—	21·63	—	—	—

TABLE VI.—*Showing the rate of increase in the annual water supply in various periods.*

Water supply authority.	Annual supply.		Storage capacity of reservoirs		Increase in the annual supply in millions of gallons in the periods					Where the increase is starred the period is
	In the year.	In millions of gallons.	In millions of gallons.	In terms of the annual supply.	1861-71.	1871-81.	1881-91.	1891-1901.	1901-06.	
Birmingham Corporation	1907	7,810	12,309	1·58	—	—	—	722*	586	1895-1901
Bradford ,, ...	'08	4,745	2,802 *c* 1,816	0·38	—	730	365	365	365*	1901-1908
Cardiff ,, ...	'06	2,061	1,079	0·52	—	—	—	—	309	—
Derby ,, and Co.*	'08	1,147	5 *s*	—	156	208	33	216	111	—
Halifax ,, ...	'06	1,760	1,346	0·76	—	—	—	—	183*	1897-1906
Hull ,, ...	'06	3,490	10 *s*	—	—	—	—	267*	113	1893-1901
Leeds ,, ...	'06	5,870	3,986	0·68	—	—	—	218*	179*	1896-1902-1906
Liverpool ,, ...	'06	10,801	16,107	1·49	1,085	21	514	2,830*	1,070*	1891-1902-1906
London—Metropolitan Water Board and Companies†	'06	82,125	9,157 *a*	0·11	—	25,039*	25,733	9,125*	5,475*	1850-1881, 1891-1900-1906
Manchester Corporation........	'08	14,615	11,135 *b*	0·76	1,597	1,401	1,723	2,419	3,565*	1901-1908
Newport ,, ...	'08	899	930	1·04	—	—	—	202	237*	1901-1908
St. Helens ,, ...	'07	1,524	19 *s*	—	—	—	365	216	280*	1901-1907
Sheffield ,, ...	'06	4,710	4,252	0·90	—	—	—	1,440*	552*	1897-1902-1906
Tees Valley Water Board	'06	5,360	1,597	0·30	—	—	—	—	1,896*	1896-1906

Note.—*c* denotes compensation reservoirs.

s denotes service reservoirs as auxiliaries to pumping installation.

a denotes that, in addition to storage, the pumping from wells yields 51·4 million gallons a day. Works authorised or in course of construction will increase the storage capacity to 14,952·6 million gallons.

b denotes that when Thirlmere is raised to the full extent, its storage capacity will be 8,135,000,000 gallons, and the total storage of Thirlmere and Longendale reservoirs will be 14,141,000,000 gallons.

* Works purchased by Corporation in 1880. † Works transferred to Metropolitan Water Board in 1904.

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Discussion *on* Mr. W. R. Baldwin-Wiseman's Paper.

Dr. H. R. Mill said his special knowledge of this subject was confined to that part of it which had to do with the amount of water available to meet the demands upon it, but he was in hearty agreement with the author as to the great importance of having some central authority charged with taking account of the natural resources of the supply. So far, their knowledge had grown up almost by chance, for many of the older records were of little value, being made at a time before the methods were properly understood. With regard to rainfall especially, some of the older records in the most important areas for the supply of water were almost useless, owing to the fact that improper instruments and methods of exposure had been adopted. The result was that in some cases as much as 50 per cent. too much rain was recorded, with a disastrous effect on water authorities who had to give compensation based on rainfall; and in other cases scarcely more than 50 per cent. of the actual rainfall was recorded, with an unfortunate effect on the possessors of water rights which ought to be adequately paid for when appropriated. The voluntary observations of rainfall had now been carried on under proper conditions for nearly fifty years, for it was in 1860 that Mr. Symons commenced his systematic collection of data; and the number of observers had grown from 500 to 4,500. But many of those areas where it was most important to get observations in order to measure the supply of available water were still left without observers. On the high moorlands and mountain summits it was exceedingly difficult to get records, and such as existed were generally obtained by engineers immediately before or after laying out waterworks on those sites. In a short time it was impossible, on account of the variations in climatic conditions from year to year, to get a trustworthy estimate of the rainfall. He had again and again been struck with the great importance of some large and impartial body being appointed to adjust the various claims for water supply. Of course, contending boroughs considered their own interests; and County Councils could only look after the areas of their own county, which they sometimes desired to supply with water brought from another county over their boundary. Absolute impartiality could only be secured by a national authority to which all boroughs and districts would be equally important, and which could advise without bias how the available water supply should be divided amongst rival claimants. It should, in his opinion, be made compulsory in all existing waterworks to record the rainfall in suitable places, so as to ascertain the actual quantity which falls, and it should also be compulsory to keep accurate records of the flow off, both of the water that went into the reservoir and that which passed outside. In that way they would be able to ascertain how much of the water that fell as rain was available for supply, which was not the case at present. Work of that sort should be extended to areas of potential supply, and should be done by some national authority, not left to the efforts of individuals. The responsibility of being the owner of all the rainfall observations made in this country since 1677 was really too great to be placed on any private individual; and he should be pleased to think that such an authority as was outlined in that Paper might be the ultimate heir of the British Rainfall Records. The value of those records was mainly practical, since for meteorological purposes a very much smaller number would probably be sufficient. They had not yet been thoroughly worked up from the point of view of their great value to the country (which would increase with each subsequent year), but they contained the means of determining the resources of the country in water, and its value both for power and consumption. At present the system was very incomplete, especially in areas where the highest rainfall occurred. There was no fear, however large the population might become, that there would not be enough water precipitated on the high lands to satisfy all requirements, if only it were properly collected and distributed. A rainfall of only 30 inches over one-tenth of the land surface of the British Isles would yield, could it all be utilised, a supply of 350 gallons per head per day for the whole present population of the country. The rainfall on the higher land averaged much more than 30 inches, and if it were distributed where it was wanted the whole country could be supplied for all time.

Mr. E. J. HARPER said what struck him during Dr. Mill's remarks was the enormous difference between the supply of water and the comparatively small use made of it. He did not think the author intended to indicate in anything he said that they used too much water. No doubt there was plenty of room for development even now, although the British "bath" was known all the world over; and he should not be frightened even at the figures quoted for the particular industrial school—although he doubted whether the swimming-bath in those figures stood for its full proportion. He should like to point out the way in which the water was actually wasted—he did not mean merely that the water which could not be used was allowed to run away, but it was carried away in a wasteful form. For instance, they saw that the intercepting sewers of London were constructed of a size five times as great as was required to carry away the normal daily flow. They had to be made of that size because on three or four days in every year they were liable to particularly heavy rain-storms, in the course of which a very large amount of rain fell in a short time. At those times the sewers were charged to their utmost capacity, and sometimes overcharged, so that a certain quantity had to be allowed to run direct into the river, instead of being carried out to Barking and Crossness. Therefore, there was a large expenditure in the construction of sewers to carry away water which they did not want and which, if it could be saved, might be made available for the water supply and thus reduce the cost of any future scheme for bringing water to the Metropolis from the Welsh hills, a result which many competent authorities thought they would have to come to, notwithstanding the efforts now made by the Metropolitan Water Board in the Thames Valley and elsewhere to meet the needs of the population for the immediate future.

Miss B. L. HUTCHINS asked whether any attempt had been made to correlate the statistics of water supply with the death rate.

Dr. R. DUDFIELD said he had read this Paper with great interest, but he regarded the contribution as historical rather than strictly statistical. He desired to offer one or two criticisms only. In the first place, the author seemed to him to have confused to a certain extent "consumption" or "demand" with "supply." "Supply" of water was referred to several times when "consumption" was really meant. Possibly the use of the word "supply" was due to the view taken of the question by his profession. From the point of view of medical officers of health, it looked like a very wrong use of the term.

The author had pointed out that between the years 1377-1801 the population of the country quadrupled itself, that ratio being, of course, based on the assumption that the population for 1377, given in Table I, could be taken as reliable. In other words (approximately) five centuries were required for the population to quadruple itself. On the other hand, in the course of one century (1801-1901) the population again quadrupled itself (see Table II). Although comparing five centuries with one, the author said he did not think the growth of the population during the nineteenth century was abnormal, and had expressed the view that a similar increase might be expected throughout the twentieth century. It appeared to him (the speaker) that such a change in the rate of increase could hardly be regarded as normal. Moreover, the evidence which was now accumulating did not point to a corresponding increase during the twentieth century. It was very doubtful whether the rate of increase would be anything like that observed in the nineteenth century. With regard to the question of the consumption of water on the railways, he desired to point out that although the economy in water consumption resulting from the improvements in manufacturing machinery had been duly set out, yet in dealing with the railway service, the author recognised no corresponding economy, assuming for the whole period a fixed average of 30 gallons per train-mile. If engineers had been able to effect such economies in stationary engines, he could not, as a layman, see why they should not assume that similar economies had been effected in the railway service—in fact, he thought very similar economies had been effected. It appeared to him, therefore, probable that the statistics of railway consumption need revision.

He thought they were all agreed that there was great need for a central authority to control the allocation of the visible supplies of water in this country. They had the peculiar spectacle of various independent municipal authorities playing a game of "grab" in Parliament for the supplies available in different parts of the country; and it was generally the case of "first come first served." It was now being recognised that the abstraction of water in large quantities from certain parts of the country to supply distant municipalities was prejudicing the growth and development of the areas from which those supplies were drawn. It was quite time steps were taken to regulate the appropriation of the catchment grounds and to safeguard the requirements of the districts in the immediate vicinity thereof. To a certain extent, the Local Government Board did exercise some control, for he understood that when a Water Bill came before Parliament the Local Government Board's officers were consulted. With what Dr. Mill said about the rainfall they must all agree. It was quite time that such observations were taken on a national basis. It was a characteristic peculiarity of the British nation that large undertakings, such as the record of the rainfall, were left to private enterprise for a long time. The Government generally took the work over when it had been thoroughly organised and credit was to be obtained with a minimum expenditure of energy.

Dr. W. N. SHAW welcomed a Paper like this, which suggested further investigation into the extent of our knowledge or, perhaps he should say, our ignorance, on the different aspects of the question of water supply. With regard to the rainfall, one must recognise that this country was exceptionally fortunate in having so large a body of observers organised so efficiently as the system had been under Dr. Mill and his predecessor, Mr. Symons. But, what occurred to him as very curious was, how little they knew about the rivers and their heights from day to day, month to month, year to year, and so forth. It might be that his ignorance on the subject was personal only, and that information about the rivers in the British Islands was to be found in books of reference if anyone cared to look the matter up. But, for his own part, except for some particulars about the Thames, he believed there was very little collected information about the amount of water flowing in rivers. Going about the country, one saw marks on bridges showing where floods came to in such and such years, and so on. But none of these data were collected in any way, so far as he knew, to give information for economic purposes, if required. It was rather astonishing that these matters were not within the cognizance of some central body. Another important aspect of the matter was the way in which they were accustomed to pollute the streams, large or small; and then, if they wanted water for domestic purposes, they had to fetch it from a great distance, from some stream not already polluted. The alternative of making a special channel to carry away pollution and using the natural water supply for domestic purposes was worth consideration. A central body having such matters in hand might well turn its attention to the conservancy of the rivers, and take up the whole matter of the hydrography of the country. The hydrographer of this country was a distinguished naval officer who dealt, not with the water in the country, but with the water outside the country—not with the rivers, but with the seas and the oceans. He thought there was room for a hydrographer in the other sense; and he trusted that this discussion might lead to provision being made for the adequate supervision of the water supply of the country.

Mr. R. H. HOOKER said the author had given a number of very interesting statistics of the quantity of water supplied in many towns, but he would have been glad if he had gone a little further and summarised them, so as to give if only an approximate notion of the total quantity consumed. He thought that the author might have been bold enough to add together the quantities used in all the chief towns as shown in the tables, and therefrom arrive at an estimate of the consumption in urban districts generally; and then, if they had the author's opinion as to the amount used by the rural population, some rough idea of the total consumption in the country could be formed, and also some notion of the rate of increase in recent times. Another point that the author had scarcely touched upon was the diminution of the amount of water available. Practically all the water used was drawn from underground supplies, although it had, of course, come originally from above ground. The question of the depletion of the underground supplies was a very much more serious problem than would appear from the paper. There had been numerous complaints in recent years that water companies were tapping the underground supplies to such an extent as to cause serious scarcity in many parts of the country, particularly around London, while elsewhere many small streams had ceased to run entirely. London, again, now made such heavy demands upon the river Thames that many persons considered that the quantity left to flow in its natural channel was barely sufficient for purposes of health. He fully agreed with Dr. Mill that ample rain fell from the skies to give enough water for all possible requirements in the future; but it had to be remembered that practically all that fell in the summer (apart from heavy thunderstorms) was absorbed by vegetation, while the winter rains, as soon as the ground was saturated, flowed off. The moral to be drawn was that which the author had drawn, namely, that this water should be stored, and more especially he would emphasise the necessity of storing the winter rains.

Mr. G. A. H. SAMUEL said there was one point which he should be glad if the author would clear up. He noticed in Table V, with regard to the Corporation of Leicester, that in the year 1901 the population was 243,000, and in 1906, 270,000; yet the annual water supply during those years had actually decreased in quantity. That was a most unusual circumstance, and he should like to know the explanation.

The CHAIRMAN, in proposing a vote of thanks to the author, said that the Paper was not only useful on account of the information it contained, but, as was often the case with Papers read before the Society, was almost equally valuable for the indications it afforded of the want of adequate information upon the subject. Impressive arrays of figures were sometimes paraded in public as statistics, to which Fellows of this Society would hardly vouchsafe that title. The discussion had brought together authorities well known for their treatment of some of the issues involved. Dr. Mill, for instance, had recently made some valuable observations at the Geographical Society on the extent of the rainfall records in the Welsh mountain tracts, and though the Doctor considered the number of observers inadequate, the speaker rather agreed with Dr. Shaw that the number of volunteer co-operators was highly creditable to this country. Official observations were not to be got without considerable expense and their popularity or importance was not yet sufficiently recognised to gain them support enough to unloose the public purse-string. It had been remarked that whereas the title of the Paper related to the consumption of water, the subject was the supply. In his experience in India, however, the latter to a great extent regulated the former and in towns, an increase in the supply usually led to a much greater consumption, not to say waste and he had himself had to mitigate unruly competition at newly erected stand-pipes similar to that mentioned in the Paper as having taken place in London in 1594. Mr. Harper's opinion on the waste of water in London was entitled to all respect, but the speaker was inclined to think that irrespective of the inevitable waste entailed by the sewer system, there was a very regrettable waste in household use and in smaller places still more, perhaps, than in the metropolis, more effective and stringent supervision of domestic consumption was needed.

Mr. BALDWIN-WISEMAN, in reply, said he was glad to hear such a concurrence of opinion in favour of the formation of the central authority which he had suggested, for he felt that only through the agency of such a body could the various returns be collected and correlated, which were so urgently needed for a thorough study of the hydrological problem.

It was of little or no use studying the problem from the point of view of water supply or of rainfall alone. Floods and the means of providing against them, sewage disposal, water supply and eventually, if the canals were resuscitated, the canal system of the country, would all have to be taken into account as a connected entity.

Dr. Mill quoted a figure giving the quantity of water available if the rain falling on a certain fraction of the total area was used for purposes of supply, but throughout the Paper he had endeavoured to guard against saying that there was an insufficiency of water. That was not the point; it was a question of cost and quality, rather than one of quantity. There would always be sufficient water in the country as a whole, if not in certain districts, but if water supplies were drawn from the lowland areas, with a large resident population thereon, a considerable amount of money would have to be expended in purifying and filtering it, so that practically they had to depend on the upland areas[1] for anything like pure water, and much of that area, small as it is, is not available for purposes of water supply; but if the best disposition was made of the resources, and if a central authority was authorised to determine how and where any particular town should obtain its supply, the rainfall would be used judiciously, satisfactorily and to the best advantage; whereas, at present, everyone struggled for what they could get, with less satisfactory results to all parties.

By way of illustration, the town of Chorley, which lies at the foot of Anglezarke Moor, and only a mile to the west of the existing Rivington reservoirs, was naturally entitled to the drainage from the Rivington watershed, in which they had a reservoir; but mighty Liverpool, 21 miles away from the area in question, came along and by putting down some reservoirs deprived Chorley of any opportunity of enlarging or extending their own scheme. In this case, however, Liverpool settled the matter, in a generous way, by agreeing to supply Chorley with what they required. But that might not always be the case; other big brothers might not always be so magnanimous as Liverpool had been and smaller authorities might be sent to the wall.

In reply to Mr. Harper's observations as to waste, while he would not quarrel with any industrial school using 75 gallons per head per day, if it were necessary, he should doubt, judging by the normal English standard, if anything like that quantity was really economically or judiciously used, but there was every probability that some of this rather large supply was wasted.

He had not any figures correlating the water supply with the death-rate. The death-rates in various towns and districts were published and one could, no doubt, tabulate the annual or daily water supply per head against these. But the water supply figures would not be available over a sufficiently lengthy period to be of much use, the figures of water supply in several towns are only approximate before 1900 and insufficiently classified under the three heads—domestic, trade and municipal—to be directly comparable.

In many cases the recorded annual water supply is merely based on the observed flow for a period of a few days, or on measurements of the inflow and outflow of a reservoir, but as everyone handling the water question knows, there is an hourly, daily, weekly, monthly

[1] Table *showing the disposition of land in England and Wales.*

Disposition of land.	Area in thousands of square miles.	Area as a percentage of the total area.
Between sea level and 250 ft. contour	26·5	45·4
,, 250 ft. and 500 ft. contour	16·3	28·0
,, 500 ,, ,, 1,000 ,, ,,	10·5	18·0
Above 1,000 ft. contour	5·0	8·6
Land under crops and grass	38·2	65·5
Towns, hamlets &c.	5·8	10·0
Moorland, heath &c.	14·3	24·5

and yearly variation[2] in the rate of supply, so that such observations over short periods are almost valueless for purposes of estimating the real annual supply.

Dr. Dudfield had differed from him on the question of population and the use of the word "abnormal" in reference to the increases in the population during the nineteenth century. He would point out that he had given a rather lengthy explanation of his intention, which qualified the sentence in which the word was used and he had hoped that it would have been interpreted in the sense of the qualifying context. He had explained, at some length, the conditions which had conduced to the apparent stagnation of the population in former times, as he did not believe that there was actual stagnation, but that the deaths wiped out the benefits gained by the births.

In the special period which Dr. Dudfield had chosen for criticism —1377—the population had been but a few years previously almost halved by the "Black Death," which from 1349 and with other plagues right down to the end of the Stuart period, ravaged the country at frequent intervals and considerably reduced the population on the occasion of each visitation. For instance, Liverpool, in common with most other towns, frequently suffered from attacks of the "Plague" and "Sweating Sickness"; in 1361 the attack was so severe that there was no one to carry the corpses to Walton for interment, and the townsmen obtained the permission of their diocesan—the Bishop of Lichfield—to bury their dead in St. Nicholas' churchyard, and in 1558 the visitation was such, that the weekly market was not held for three months and the annual November fair was abandoned; medieval opportunities for earning much money which no townsman would lightly forego. In the nineteenth century there was the additional advantage of having medical officers of health and hospitals and the progress made in medical and other sciences, the

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[2] TABLE *showing the average daily supply during each month of the year in terms of the average daily supply throughout the year as unity.*

Towns or districts	London.	Manchester.	Liverpool.	Bilston.
Period	1906.	1905-08.	1899.	1897-1902.
Average daily supply in thousands of gallons	222,376	37,654	25,306	754
January	0·922	0·967	0·885	1·011
February	0·904	0·968	0·976	0·989
March	0·914	0·957	0·921	1·005
April	0 951	0·961	0·933	1·000
May	0·986	0·999	1·01	0·995
June	1·082	1·015	1·04	1·029
July	1·129	1·055	1·06	1·052
August	1·114	1·028	1·09	1·037
September......................................	1·089	1·037	1 04	1·027
October..	1·003	1·027	0·996	0·961
November.......................................	0·964	1·002	0·972	0·936
December.......................................	0·942	0·987	1·06	0·946

provision of good water supplies and of efficient urban and domestic sanitation, all tended to revolutionise the conditions of existence and differentiate them from those of all previous centuries. In former times, all sorts of filth were thrown or drifted into the wells; punishments being frequently inflicted, at the Court Leets of various towns, for the fouling of the wells or the streets near by.

In Lymington wells were sunk in the High Street and apparently by way of insuring the contamination of the sixteenth century water supply of this medieval town, the butchers' shambles were grouped all round the area. Again, in restriction of the population, there were the limitations imposed by the trade guilds, by civil wars, and by famine.

As to the further point raised, he admitted that railway engines had improved as much and probably more than stationary steam engines, but, the figure which he used in his table to multiply the train-mileage by, was the best and most recent figure and not the worst figure; if any corrections were made for the earlier years, he would have to increase the figures of water consumption in those years by two, three or four times that stated; but what it was, nobody knew, as records are not available for the earlier years.

With regard to the Local Government Board reporting on Bills before Parliament, they certainly did report at present on the financial and engineering aspects of any schemes before them, but he hoped it would one day be possible, not only to report on these aspects, but also on the hydrological aspect and the suitability of a scheme, not only for the wants of a particular district, but also for its co-ordination in the greater scheme of the most economical development of the water resources of the whole country.

There were efficient fishery and conservancy boards, such as the Thames Conservancy Board, who kept records of the stream flow and of the take of the water companies, if there were any, on the stream; but such records were few in number and not general in application, so that engineers had, not infrequently, to form an opinion on a paucity of recently acquired or discontinuous data and were thus liable to arrive at incomplete and inaccurate conclusions.

What one wanted to know was the amount of the rainfall on and run off from, the various geological formations. The rainfall returns, excellent as they were, were not infrequently inadequate to supply this data; as frequently, in upland areas, where records were most wanted, no meteorological station had been established. One also needed to know the variations in the levels of the springs, the rate of rise of the floods on the several streams, the highest flood levels and the frequency and duration of the floods; data which would vary for each river and for the different geological formations along the same river course.

Much of the present information as to floods is very uncertain, as one realised, if it was one's misfortune to work up a flood case, some months after the flood had subsided. The oldest inhabitant would gladly indicate, with much assurance and a wealth of detail, the several points to which he could recall the flood had risen, but when one came to level these, if the error had not already been detected by ordinary observation, one felt that there must be some flaw in his memory or in his powers of observation, as there would be differences of level of 5, 10, or even more, feet between reputed flood levels not very far apart and one wanted more reliable data than that.

He was pleased to hear Dr. Shaw make the suggestion that there should be a hydrographer, who should be a landsman, in addition to the present holder of the title, who was a navy man.

Mr. Hooker wished that he had summarised his results and given the increase over the whole country for a period of years, but he wanted his Paper to be certain on the points upon which it touched and he felt that to have attempted such a table would have been almost worse than useless; in such a Paper as this, it was more a question of what one left out, rather than what one put in and when he looked into the various published records, many of those he had at first thought of using had to be eliminated, owing to various causes, some of which he had already mentioned.

Again, records over a lengthy period are not directly comparable, as the area of supply, the extent, nature and administration of the works, varied from time to time. A water supply might be administered by a company, then taken over by a township and finally perhaps transferred to a water board, the conditions of supply and waste prevention varying during the period covering these several transfers. In the earlier part of the period the annual supply might be estimated, in the latter part it might be accurately metered, new works might be added, old works improved and enlarged and a variety of other causes might give rise to a variation in the supply in no wise comparable with those of earlier years.

A question had been asked about the Leicester figures recorded in Table V, and whilst it would be answered by the replies to other queries, the question itself would serve as an illustration of this point.

When meters are introduced and officers are appointed to supervise the fittings, the waste immediately begins to decrease, for the users, knowing they are being watched, are more careful and knowing the inspectors are liable to call and complain of the defective taps and cisterns, take care to repair them when defects are developed, whereas in all probability they would not do so if no inspector called.

If a general figure were required for the total national consumption, he would say he made an estimate, some years ago, that about 80·5 per cent. of the total population of England and Wales was supplied with water. Using this figure and allowing 25 gallons per head per day, the annual consumption works out at about 259,600,000,000 gallons of water. This might be a fair figure, but he would only put it forward as an approximation, for there were many supplies of which no measurement was taken at all, particularly in the cases of villages and small country districts.

Reverting to the criticism on the use of the word "supply" or "consumption," he would say that an engineer always used the word "supply," meaning not only the works forming the system of supply, but also the delivery of water to the consumer. To an engineer "supply" meant "consumption," the latter word being hardly ever used in engineering literature, and never in professional conversation.

As to the percolation through the soil, they did not know the total available amount of water which could be withdrawn from underground sources for a variety of causes. First of all, the formations varied in thickness, in porosity, in extent and in the condition and inclination of the outcrop. One formation might be bare, horizontal and more or less open and a considerable portion of the rainfall would find its way into it; another might be steep, or the greater portion of its area might be covered with clay and but little rainfall would get into it. But even if this could be accurately estimated, one could not estimate the amount stored in any strata without knowing the thickness or the porosity of the strata.

In a paper which he read before the Geological Society[3] about three years ago he did work out an estimate for the amount of percolation over the whole of the Thames basin, and that figure came out at about 3·4 inches out of a total average annual rainfall of 26·1 inches. But when one had determined the amount of rainfall which got into a formation, one could not then determine the amount which could be got out, as that was limited by the disposition, depth and dimensions of the wells, the power of the pumps and the dimensions of the cone of depletion, which varied with the frictional resistance of the strata.[4]

An excellent case presented itself in the East Riding. A large amount of water is drawn from the chalk for the supply of Hull and Beverley, yet near by are certain villages, such as those of Holderness, which would be glad to have a supply of almost any kind of good water, but cannot obtain it; yet, bubbling up in the muddy waters of the river Humber is a large volume of fresh clear water, known as the Hessle whelps, running to waste from the chalk, from which Beverley and Hull obtain their supplies.

The following were elected Fellows of the Society:—

William Henry Beveridge.
James Henry Duffell, A.I.A.
James Kerr, M.A., M.D., &c.
Viscount Ridley.
Charles Vincent Sale.

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[3] W. R. Baldwin-Wiseman. *The Influence of Pressure and Porosity on the Motion of Subsurface Water. Quart. Journ. Geol. Soc.*, vol. lxiii, 1907, p. 100.

[4] W. R. Baldwin-Wiseman. *The Flow of Underground Water. Min. Proc. Inst. C.E.*, vol. clxv, 1905-06, part 3, p. 327.

The MEAT SUPPLY *of the* UNITED KINGDOM.

By R. H. HOOKER, M.A.

[Read before the Royal Statistical Society, 18th May, 1909,
Major P. G. CRAIGIE, C.B., Hon. Vice-President, in the Chair.]

IN his opening address, as President of this Society, Major Craigie in 1903 suggested that "the future sources of our meat supply in "this country might be a subject worthy of closer investigation "than it has received."[1] It has fallen to my lot to furnish the Departmental Committee on Combinations in the Meat Trade, on behalf of the Board of Agriculture and Fisheries, with a series of tables of cattle and meat prices, number of live stock in different countries, home production and consumption of meat; and it seemed to me that an examination of this material, covering a period of thirty-two years, might form a useful indicator to the future. It is almost needless to remark here that no one has done more in this direction than Major Craigie himself, and I trust that I shall not be regarded as unduly presumptuous in endeavouring to carry out his suggestion. Much of the work is, I am afraid, merely following in his footsteps, but at all events I carry them forward five years later.

Before dealing with the tables themselves there is one broad feature of the past thirty years or so upon which I wish to lay peculiar emphasis, as its effect upon the course of prices is apt to be overlooked. Yet it is not too much to say that its bearing upon almost all questions of supply and prices is fundamental. I allude to the fact that, with nearly all kinds of produce, prices are nowadays determined by the supply and demand, not of a particular country, but of the whole world. Means of communication and transport have developed so enormously of late years as to produce a complete revolution in the conditions governing prices, and trade is no longer regulated by internal concerns, but by the sum total of the varying influences in all countries of the globe.

The change from a national to an international trade has mainly occurred during the past half century. It has affected different commodities at different times; indeed, there are still certain kinds of produce which have yet to feel its full effect. The earliest commodities subjected to outside competition were—speaking very generally—those which could be stored for a considerable period without deterioration of quality, and which could therefore be transported without loss. It is perhaps hardly fair to reckon among them such exotic products as cotton, tea, and the like; these have been for long drawn from the world at large, and the chief causes of permanent changes in their price are due to the opening up, or rapid extension, of new countries of supply and demand; and possibly the effects of over-sea competition in the case of wool may also be said to be prehistoric—in the statistical sense.

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[1] *Journal of the Royal Statistical Society*, vol. lxvi, 1903, p. 679.

Apart from this class of goods, one of the earliest, among the more obvious revolutions, by which the trade was placed upon an entirely new footing, was that in the corn trade. At the beginning of the seventies a good English harvest still meant cheapness; ten years later a good English harvest had nothing to do with the price, for by that time the trade had become an international one. For yet another ten years it was found that there were still large areas capable of producing corn cheaply, and, thanks to the improved facilities of transport, areas from which it could be placed on the market without any difficulty. And so prices continued to fall. By the middle of the nineties prices had reached their lowest point; no further areas that could produce corn with equal cheapness were within reach of commerce, or, rather, such new areas were not large enough to affect the total supply or more than satisfy the increasing demand. And so the past ten years have seen relative stability of corn prices; the world's supply and demand are probably not far removed from equilibrium. How long this will continue depends upon the disturbance of the balance. If the development of new areas—such as those in Argentina, Western Canada, and elsewhere—proceeds at a greater rate than the exhaustion[2] of old—such as Europe and parts of the United States—then corn prices will fall; if the reverse be the case, they should rise.

What has occurred in the case of corn I believe to be the normal rule which has affected, or will sooner or later affect, all kinds of produce. Meat was not similarly affected for perhaps a decade or so after corn, *i.e.*, during the eighties. The cause of the delay was that meat is a more perishable product than corn, and in addition to the development of means of transport, means of preserving the product had also to be devised. This postponed the world's competition for some ten years or so, but when once the process of freezing meat had been rendered practicable, the inevitable arrived and importers began to land meat from a distance in appreciable quantities. (*Salted* meat had, of course, long been imported.) The fall in prices in the case of beef and mutton was, however, not so long drawn out as with corn, and for the past twenty years the general trend of prices has remained nearly level, though of course with temporary fluctuations.

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[2] *i.e.*, relatively to population, cost of production, &c.

Among commodities now in this transitional period may probably be reckoned hops, which are now exposed to the competition of a large area on the Pacific coast of the United States, and which are also affected by the development of cold storage, allowing any surplus production of one year being reserved till the next. The present crisis in this industry may safely be ascribed to the entry of the New World into the trade (of course, the European competition has long been present) and to cold storage. Among imported British products as yet unaffected, but threatened in the same way, are the choicer kinds of soft fruits, serious experiments in the transport of which from distant countries are being undertaken; while of those which for the moment appear unmenaced—at least in the immediate future—hay and fresh milk are perhaps the most important. The first is so bulky that it is only when the price is very high that material quantities seem able to bear the cost of carriage, while means do not yet appear to have been devised to place the latter upon the market in the same condition as the home produce, and it pays better to convert it into butter and cheese before sending it over. In fact, it is mainly cheap and bulky materials such as these, which take up so much space on vessels that their cost of carriage is large compared to their market value, that will probably be the last to suffer from the competition of distant countries.

This rather long exordium is intended to emphasise the fact that the question of our meat supplies and prices must be regarded from the international point of view. Accordingly, I propose to glance first at such statistics as exist concerning the world's supply of live stock, and to mention briefly a few of the salient features in the chief countries which we may expect to provide us with our dinners in future.

To attempt an estimate of the number of cattle, sheep or pigs on the globe is a difficult task. It is clear in the first place that such an estimate must be confined to those countries that are sufficiently civilised to take some sort of a census of their live stock. Most civilised countries now do this, at varying intervals; and as these comprise practically all the sources of any importance in international trade, we may, without too much danger, form an idea of the live stock in the "meat-trade world."[3] This, of course, excludes enormous areas such as China, most of Africa and South America, &c. But the exports from these are practically negligible, and their stock cannot—at least at present—be drawn upon to supplement deficiencies. I propose in addition to omit India, with its 50,000,000 cattle ("excluding calves"), or, including buffaloes, close upon 100,000,000 head. Comparable data regarding this Empire cannot be carried very far back, and so far as concerns meat it is at present a negligible factor in the trading world. Our total will therefore be a sort of net available total for such countries as either require help from outside or offer it to others.

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[3] The countries comprised in this are limited to those enumerated in Table I.

Even with this limitation, considerable difficulties present themselves in determining the very unit to be admitted. The famous question suggested by Major Craigie: "What is a cow?" remains, from the statistical point of view, unanswered. The cow, in fact, is a unit that may vary from the "milch cow" of the United States' Department of Agriculture—which appears to be the equivalent of the "dairy" cow in the census of 1900: the latter (17,140,000 in number) being "dairy cows 2 years and over," and excluding "heifers 1 and under 2 years" (7,184,000), as well as "other cows "2 years and over" (11,592,000)[4]—to the "cow" of the Italian enumeration of 1882, which "includes calves under one year old."[5] A suitable definition of a cow is, in fact, a matter which may be commended to the International Statistical Institute, or the International Agricultural Institute, as one deserving of serious consideration.

Apart from such difficulties of sub-division of animals according to age, sex, &c., which are not material to the present issue, there is the genuine zoological difficulty of genera and species. An enumeration of "cattle" in some countries includes buffaloes, or at least does not always distinguish them clearly (*e.g.*, India), and probably other animals closely allied to the European *Bos* are sometimes swept into the statistical net. Indeed, it would not be possible to draw a distinction that the uneducated mind of the peasant in many countries could appreciate. As regards sheep, matters are not on any better footing. Most countries enumerate goats separately, but a few include them with sheep. And the latter are frequently right. Here in England we know the difference between a sheep and a goat, but I believe it to be the case, more especially in tropical climates, that the varieties of sheep and goats are not only extremely numerous, but that they pass into one another by insensible gradations. Buffaloes and goats, in the countries under review, have been excluded as far as possible.

Among the appendices to the evidence taken before the Departmental Committee on Combinations in the Meat Trade[6] will be found tables showing the number of live stock, taken from official data, in all the more important countries since 1877. Similar data for as many countries as possible are given in the annual Agricultural Statistics. From these two sources I have compiled Table I, showing the number of cattle, sheep, and swine in each country of the civilized world, at intervals of about a decade. In many cases no data exist for the years stated, and in such instances I have interpolated an estimate of my own.[7] Generally, such interpolated estimate is simply proportionate to the nearest official figures before and after the dates specified; but in some cases other considerations have been taken into account—*e.g.*, in Australia, the numbers are affected by drought or rains, and where the total is not available, the fluctuations in those Colonies which do make an annual enumeration give a fair clue as to the probable number on the whole continent. All my own estimates are printed in italics.

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[4] *United States Census of* 1900, vol. v, part i, p. 323.

[5] *Agricultural Statistics*, 1907, part iv, p. 391.

[6] Cd-4661, pp. 257—269.

Cattle.

United Kingdom.—The number of cattle in the United Kingdom shows, on the whole, an increase during the past thirty years—from about 9·8 millions in 1878 to 11·7 millions in 1908. It may be observed, however, that the increase was nearly all in the first half of the period, the total reaching 11·5 millions in 1892, after which there was a drop of three-quarters of a million head in two years. [This fall is exceptional, and will be referred to again later.] Since then it has slowly risen again, and the latest number is a record. That the number has increased only half as fast since 1895 as previously may, I think, be safely attributed to the general decline of the farming industry, and to the gradual encroachment of towns and industrial concerns upon the agricultural land. It is not without interest to observe that, whereas in 1877 1 head of cattle was kept for every 4·85 acres of the "area under crops and "grass," the corresponding number was 1 for every 4·16 acres in 1892, 1 for every 4·45 acres in 1895, and 1 for every 4·00 acres in 1908.

United States.—Here we are in difficulties. This country undoubtedly has the largest stock of cattle in the world (except, perhaps, India); but comparisons with earlier periods are only to be made with great caution. The figures issued annually by the Department of Agriculture underwent a careful scrutiny, and were completely revised, in 1906-07, with the result of an addition to the nominal herds of some ten million head—not for the first time, as similar revisions at earlier dates resulted in additions of several millions to the stock as returned in immediately preceding years; notably in 1901, when the number was given as 18,400,000 (or 42 per cent.) more than in 1900. The latest revision puts the number in 1907 at 72,534,000, and it is stated[8] that this figure is not comparable with earlier years. This number is made up of 20,968,000 "milch cows" and 51,566,000 "other cattle," which are stated to be 102·4 and 98 per cent. respectively of the numbers in 1906. This enables us to estimate the number in 1906 at 73,100,000. As the number returned in 1908 (1st January) is 71,300,000,[9] this points to a decline of 1,800,000 head in the two years, made up of an increase of some 700,000 cows and a decrease of 2,500,000 other cattle. These latter, of course, include the beef cattle, and all that can be said is that such a decline is compatible with the known shortage of beef cattle in the United States in the last two or three years, which has so restricted imports thence and enhanced prices here. Apart from 1906-07, the chief revisions of the Department appear to have been made as the result of the publication of the numbers ascertained at the enumerations in connection with the decennial census, and I have preferred to take the latter figures in my table (except, of course, for 1908).

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[7] I have also adopted some of the estimates given in Sundbärg's *Aperçus statistiques internationaux.*

The census figures, however, are not themselves comparable, inasmuch as the census of 1900 included spring calves, a procedure which was adopted in only a few instances in the enumerations of 1880 and 1890. Of the number enumerated in 1900, however, 15,333,000 were "calves under 1 year," leaving 52,489,000 as the number of cattle, excluding calves. Again, the 1900 Census Report estimates that at least 10 per cent., and possibly 20 per cent. of the "other cattle" (*i.e.*, not milch cows) in 1890 were calves under 1 year old.[10] Assuming 15 per cent., this brings the total of cattle, excluding calves, down to about 52,589,000 head. On the other hand, the Census of 1890 enumerated cattle on ranches separately from those on farms, and calves *may* have been included in the former. Assuming that this is so, and assuming again that the proportion of calves on farms in 1890 to other cattle was the same as in 1900, we get 13,520,000 as the calves on farms in 1890, whence the grand total (including ranch cattle) works out at 66,110,000; or, allowing for calves probably omitted among the ranch cattle, say 66,500,000. There are other complications, and this figure cannot be regarded as nearly accurate; the limit of error might, I think, be as much as 3,000,000 on either side. But it is obviously a better figure for comparative purposes than the 52,800,000 enumerated at the census of 1890. A similar calculation for 1880 shows 46,000,000 head, subject to a similar margin of error.

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[8] *Crop Reporter*, February, 1907.

[9] The number on 1st January, 1909, is given as 71,100,000 (*Crop Reporter*, February, 1909).

[10] *United States Census of* 1900, vol. v, part i, p. clxii.

The absence of trustworthy data regarding the chief source of our beef supply is singularly unfortunate, and we are really not in a position to trace, with any degree of certitude, the course of events in the past, or, consequently, to judge adequately whether the United States can continue to supply us at the same rate as hitherto. The effect of my calculation is to indicate that whereas between 1880 and 1900 cattle increased as rapidly as population, this has not held since, although, as shown by the course of trade, the surplus available for export still continued to increase for some time. But when will this surplus cease to increase? The statistics really do not supply a definite answer. I take it that a time will come for the United States, as for every other country, when it will be "fully" stocked with cattle, but we have few facts to show how near that time is to the present; to show whether the present scarcity is a real sign of the high-water mark of their export trade having been passed, or whether it is merely a trough between two waves.

The rapid encroachment of civilisation upon the vast ranching areas has frequently been mentioned [and is again much to the fore at the present moment] as a factor which is bound to extinguish cheap cattle feeding. Some ten years ago this was ably discussed in two Foreign Office Reports[11] by Mr. H. O'Beirne, who considered, as a result of examining the annual United States cattle statistics, and other material, that this was then in full progress, and that the consequent scarcity was being rapidly accentuated. The official figures, indeed, showed a decline from 53,000,000 to 44,000,000 head between 1894 and 1899, but the enormous increase shown by the 1900 census indicates that this decline was probably imaginary, and that the numbers had really been increasing all the while. I think Mr. O'Beirne's contentions as to the effect of the disappearance of ranching upon the cattle industry are none the less true, the only error—and that not his—being that this disappearance was not going on then. Is it now?

Argentina.—From *our* point of view this ranks next to the United States in importance. Enumerations have been made at rare intervals, but these indicate that the number tends to increase fairly steadily, the total at the latest census in 1908 (29,100,000) being greater by 7,400,000 than at the previous, which took place so far back as 1895.

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[11] *F.O. Reports.* Miscellaneous Series, No. 403 (1896) and 481 (1898).

Australia.—The live stock of this country is peculiarly susceptible to the ravages caused by drought, and its history of cattle raising, like that of sheep, seems to consist in alternations of decimation of the herds, followed by gradual reconstruction. It may possibly surprise some readers to learn that the chief cattle State is Queensland, though some of its prominence has recently departed. The culminating year for Queensland (and Australia) was 1894, when it possessed 7,000,000 head out of a total of 12,000,000 on the continent. From this the number declined rapidly until a minimum of just under 2,500,000—practically the same figure as in 1878—was reached in 1903, out of perhaps 6,800,000. In common with the other States, Queensland has since greatly increased its herds, and Australia has now some 10,000,000 head.

New Zealand, less subject to climatic vicissitudes, shows practically steady progress, and there are now some 1,800,000 head in that island.

Europe.—*Russia* has the largest stock of any country after the United States. Statistics are available only since 1900 for the Empire as a whole: they show the total to have fluctuated between 40,000,000 and 45,000,000, and there is not much evidence of increase in the past decade, in spite of the progress of her Asiatic territories. The future of Russia as a possible purveyor of meat is quite an unknown quantity. Suggestions for developing the export trade are frequently heard, but there are many other ways in which the vast areas at present unutilised, particularly in Asia, may be rendered profitable. *France* exhibits a condition somewhat similar to our own: there have been throughout some 2,000,000 to 3,000,000 head more than in the United Kingdom—rather more in 1900-02, in which latter year the figure almost touched 15,000,000; since when the stock has diminished by 1,000,000. *Germany* and *Belgium*, both meat-importing countries, show steady progress, on the whole not disproportionate to the population, as does *Denmark*. Other countries do not call for special comment.

Sheep.

It may be said that the great feature of the past thirty years has been the steady, and indeed rapid, approach to extinction of the flocks of Europe. This is probably in part due to the quick extension and severe competition, during the first part of the period, of the Southern Hemisphere. Since the early nineties, however, this has received a notable check, and it can hardly be said that any country in the world is at present developing its sheep industry. The decline in the world's sheep stock since 1890 must be something like 7 per cent.

United Kingdom.—The decline here is much less than in any country of Central Europe. In 1877 our flocks numbered 32,220,000, and reached a maximum of 33,600,000 in 1892. Since then there has been a gradual decline to 29,000,000 in 1904 and 1905, followed by an increase of a couple of million since—due, no doubt, to the high prices of wool in 1906-07. Generally speaking, however, the comparative maintenance of our sheep stock may probably be ascribed to the continual conversion of arable land to permanent grass which has been so marked a feature since the fall in corn prices in 1875-95. Sheep fluctuate considerably in numbers, and seem much affected by climate, or diseases consequent thereon; the drop of over 4,000,000 between 1879 and 1882 was caused by the very wet summer of 1879, which resulted in great losses from liver-fluke.

Australia.—The statement above, that no country seems now to be developing its sheep-farming industry, is apparently contradicted by this continent, which has gained 15,000,000 to 20,000,000 head since 1900. But this is a revival, and the present total—probably not much short of 90,000,000—is not yet equal to that of the early nineties. The history of sheep in Australia is, in fact, intimately bound up with climatic cataclysms in the shape of prolonged droughts which ravage the flocks, they being followed by years of normal or abundant rainfall, during which the flocks are built up again. To take New South Wales, for example, which possesses more than half the Australian total, there was rapid progress from 21,500,000 in 1877 to nearly 62,000,000 in 1891 (with only one bad check in 1884). Then came the lean years, and the numbers fell away steadily, with slight exceptions, but including drops of 9,000,000 between 1894 and 1895, and of no less than 15,000,000 between 1901 and 1902, when there remained no more than 27,000,000. At this period the Australian total must have been far below the Argentine. This proved the nadir, and the number has since greatly increased. Queensland shows similar vicissitudes; Victoria and South Australia suffer rather less violently. The absolute maximum total for Australia was 105,400,000 in 1891, the absolute minimum (since 1878) probably exactly half of this, in 1902 or 1903. Although the numbers in the last six years have therefore shown steady and satisfactory increase, yet it is impossible to say that disastrous droughts will not recur to wipe out the flocks; and it appears probable that some 100,000,000 to 120,000,000 sheep will prove Australia's maximum for many years to come, unless the return of a bad drought is unduly postponed.

New Zealand does not suffer like Australia from drought; this colony shows steady, though not over-rapid, development—not so rapid as in cattle. Conceivably this may be due to so many exporters of meat from New Zealand making a speciality of sending over lamb instead of the full-grown mutton.

Argentina.—This, after Australia, is the most important sheep country in the world. The rise in numbers was in earlier years rapid, and 74,400,000 was attained in 1895. No further enumeration has been made until 1908, revealing a total of 67,200,000 only, which appears to indicate that the high-water mark has been passed.

Uruguay is important (for its size it has also a large cattle industry). The number of sheep appears to have risen from 11,000,000 in 1892 to 18,600,000 in 1903; but there would seem to have been a decline since to something like 14,000,000.

South Africa.—This practically completes the southern hemisphere. The chief district is Cape Colony, where sheep appear to have reached a maximum about 1891-93, when it had little short of 17,000,000, though by 1899 this had fallen to 12,600,000. In the following troublous years no statistics were collected, but a rapid rise from 11,800,000 to 17,150,000 is recorded between 1904 and 1907. (I am not certain that these figures apply to the same area.) Paucity of comparable data compelled me to omit the *Transvaal* and *Orange River Colony* from my tables; the latest data (about 1905) show 4,194,000 in the latter, and 847,000 in the former.

United States.—Differences in the method of collection make it just as difficult as in the case of cattle to say what is the state of affairs here; and the general remarks I made in discussing the cattle statistics apply equally to the sheep. It would appear probable that the industry is more or less stationary. I incline to the view that the high-water mark has been passed, but I believe some States have still considerable areas available for sheep. For the purpose of my tables I have made similar calculations to those for cattle. Spring lambs were, theoretically, excluded in 1880 and 1890, but the United States Census Report of 1900 considers it "probable that not more than 10 per cent. of the sheep enumerated"[12] previous to that year were lambs. The number enumerated in 1890 was 40,876,000; hence, deducting 10 per cent., we get 36,789,000 as the number excluding lambs. Assuming again the same proportion of lambs as in 1900, when 21,668,000 were recorded as against 39,938,000 of other ages, we find 19,960,000 lambs, giving 56,700,000 as a very rough approximation to the number in 1890. A similar calculation gives 58,600,000 for 1880. A rise of 1,500,000 is recorded in the Department of Agriculture's figures between 1908 and 1909.

[12] *United States Census*, 1900, vol. v, part i, p. ccxiv.

Europe.—Spain, once so famous for its wool, would appear to be stationary with 13,000,000 to 14,000,000; but enumerations are so rare that it is difficult to be sure, and the same remark applies to *Italy*. The largest number of sheep in the Old World is to be found in the *Russian Empire*, which exhibits a decline from 71,000,000 in 1903 to 57,500,000 in 1908. As with cattle, however, the vast Asiatic areas (where the number is steadily increasing) render it unsafe to say that this Empire may not again increase its flocks. The most startling decline in Europe is, however, that in *Germany*, whose 19,000,000 sheep of 1883 were in 1908 reduced to 7,700,000. In *Belgium* also the industry has dwindled to such an extent that sheep are no longer distinguished in the live stock returns. *France* tends to resemble more the United Kingdom in showing but a slow decline, although it is more persistent and accentuated than here, since it amounts to a loss of 6,000,000 head, or 25 per cent., in the past thirty years.

Pigs.

United Kingdom.—The number of pigs, while showing a tendency to increase gradually, exhibits very marked fluctuations, the number oscillating regularly, with a period of about five to six years, round a mean which is now something under 4,000,000. For instance, maxima occurred in 1877, 1883, 1890, 1896, 1899 and 1904; while minima were returned in 1880, 1886, 1892, 1897, 1901 and 1906. The latest number, 4,056,000, in 1908, is probably very close to a maximum, and a fair guess may be made that the 1909 total will hardly exceed this.[13] These fluctuations are intimately connected with the prices of pig meat; in fact, prices and numbers (or more strictly the total of home and foreign pig meat available) react upon each other with remarkable regularity. Owing to the prolificity of this class of meat, the variations in the total supply are, as will be seen later, largely dependent upon home production; moreover, owing doubtless to considerations of price, imports are generally heaviest when the home supply is greatest. It must not be overlooked in this connection that pigs can often be raised comparatively cheaply, owing to their ability to assimilate more or less refuse food or bye-products—particularly of the dairy industry; and variations in the price of the finished product form a greater percentage on the outlay when the latter is low.

It may be observed that in Ireland there has been a distinct tendency for the maxima and minima to occur before they do in Great Britain. Since the 1907 number in Ireland (1,317,000) was greater than that of 1908 (1,218,000), whereas the reverse holds in Great Britain, this is a further indication that 1909 will show no increase over 1908: moreover, the number of sows kept for breeding had also turned downward in 1908.

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[13] The considerable diminution in over-sea supplies may possibly, by keeping up the price, falsify this forecast.

United States.—This has by far the largest pig-population of any country: in fact, we may credit it with fully 40 per cent. of our "trade-world" total, and up to 1899 it had quite half. So far as I can ascertain, the difficulties in comparing 1890 and 1900 in the case of cattle and sheep are not considered to occur with pigs. Judging by these census figures there has been a great slackening, if not a considerable decline, in recent years; this is confirmed by the Department of Agriculture's estimates, and, as will be seen later, by our own trade returns. The number of pigs in 1909 is given by the Department of Agriculture as 54,150,000, or 96·5 per cent. of the number in 1908.

Of other countries outside Europe, *Canada* and *Argentina* are steadily (the latter rapidly) increasing their pig stock, although their numbers are not yet considerable. It is singular that every other country possesses absolutely insignificant numbers at present.

Europe.—The feature of the live stock industry of central Europe —*Germany*, *Netherlands*, *Belgium*, *Denmark*, *Austria*, *Hungary*—is the wholesale substitution of pigs for sheep. All these countries, and *Roumania*, have doubled their stock of pigs in about twenty years, and it is not without interest to note that the increase is largest in those countries where dairying shows the greatest progress; Denmark has tripled its numbers, and the same factor has doubtless been effective in Argentina. It may indeed be regarded as matter for speculation, seeing the recent tendency in the United Kingdom to develop the dairy industry, that our pigs, and particularly the Irish, have not increased more rapidly; and it is quite certain that the British have not appreciated the profitableness of skim milk and the like in the same way as kindred races on the Continent. *France* has also steadily increased the number of her pigs—not so rapidly as her north-eastern neighbours, but far more than the United Kingdom. *Russia*, almost alone, records no increase, but rather a decline. The importance of *Servia* as a pig centre may finally be mentioned.

World's stock of meat.

In Table I, I have ventured to add an estimate of the total stock of animals at intervals of a decade in each country, expressing sheep and swine in terms of cattle as follows:—

The average number of cattle in 1898-1907 in the United Kingdom was 11,478,400; on the average of the ten succeeding meat-years we produced, as will be seen later, 13,438,000 cwts. of beef (or veal). Hence 1 "cattle" has yielded 1·171 cwts. of beef. Similarly 30,178,700 sheep have yielded on the average 6,075,000 cwts. of mutton, or 0·201 cwt. of meat for every sheep enumerated; and 3,786,500 swine have yielded 5,521,000 cwts. of pig-meat, or 1·46 cwts. for every pig. Hence, from a meat point of view, we may reckon 1 sheep as equivalent to 0·172 cattle, and 1 pig to 1·25 cattle. It is perhaps not generally appreciated that an "average "pig" will, in the course of a year, yield more meat—either on its own body or its progeny—than "a cattle."

I have adopted these equivalents to get at the total meat animals of different countries. It is, however, to be noted that these equivalents are not to be used for comparing one country with another; ripe beasts are not of the same weight in each country, nor is the proportion of males to females, &c. And for comparing the live stock of a country at different periods, this method only gives the *potential* supply, which was obviously far from reached in earlier years. Hence the real increase in the meat actually delivered annually from the animals is clearly much greater than that indicated, since I have made no allowance for improvements in fattening, &c. In looking to the future, we are bound to take into account the possibility, if not probability, that where—as, for instance, in Australia—the live stock does not produce the amount of meat assumed for this country, the flocks and herds will be graded up to these quantities. And for this purpose it is right to take these equivalents; and even allow for future improvement.

Looked at from this point of view, it is clear that the increase in the world's potential supply of meat was much greater in the two decades, 1880-1900, than it has been subsequently. In the first decade it was America and the Southern Hemisphere that showed the most rapid advance. Between 1890 and 1900 Europe alone made great strides, developing both cattle and pigs; North American progress slackened, while the Southern Hemisphere actually retrograded, owing to Australian droughts and possibly the South African war. Since 1900 European progress has slackened, North American has retrograded, and the Southern Hemisphere has made a great recovery.

In the last two columns of Table I, I have added the approximate populations at the commencement and end of the period. During the first decade the world's meat stock probably increased at a distinctly faster rate than population; in the second, perhaps not quite so fast; but since 1900, population has very decidedly increased much faster than the meat stock. This is not incompatible with our having more meat to eat, because thirty years ago there must have been great waste, and much live stock was never converted into meat at all. But the margin between the amount of meat actually delivered from the farm animals of the world and the potential supply shown by my estimates must have considerably diminished in the last decade.

Home production of meat.

Having thus briefly surveyed the living stock of meat in the world, let us now proceed to see what use we are making of it, and what share we have been able to obtain for ourselves. In the first place, I propose to examine the amount of food yielded by our own flocks and herds.

In Table II, I have reproduced from the appendices to the Meat Committee's Report[14] the estimate (based upon the data obtained by this Society's special Committee five years ago) handed in by the Board of Agriculture and Fisheries of the meat production of the United Kingdom for the past fifteen years; adding three further years at the commencement, because the year 1893-94, with which the table originally commenced, happens to have been very abnormal. Unfortunately, it appears that 1890-91 is not a much better starting-point, as the figure of home production for that year looks remarkably low. But I have not ventured to carry these estimates further back, as at this distance of time certain disturbing factors, of unknown magnitude, that ought to be allowed for, come into play, and to push these calculations too far would be to erect a superstructure which these statistical foundations could no longer safely bear. Possibly the quinquennial average, 1890-91 to 1894-95, gives a fair approximation to what was the normal home supply at that period.

This table is a fruit of the labours of the Society's special Committee appointed to inquire into the production of meat and milk in this country in 1902; and I think the Society has every reason to congratulate itself upon the usefulness of that piece of work. The process adopted is given in full detail in the "Meat and "Milk Committee's Report,"[15] but it will perhaps be convenient if I insert a short summary here:—

To the total number of cattle, sheep, or pigs enumerated at the beginning of the year add the estimated number born during the year, deduct the estimated number of deaths by accident or natural causes, the number exported during the year, and the number surviving at the end of the year—that is the total number returned, and the remainder is the number slaughtered for food. In the case of cattle, the number of calves born is estimated to be 90 per cent. of the cows and heifers, and the rate of mortality 4 per cent. of the total cattle, including calves. Of the number slaughtered, 70 per cent. are estimated to be beef cattle, and 30 per cent. calves. These taken at 660 lbs. and 95 lbs. per head respectively give the estimated total of beef and veal. In the case of sheep, the number of lambs born during the year is taken as 112 per cent. of the ewes enumerated at the end of the year, and the rate of mortality at 4¼ per cent. of the total of sheep and lambs. Of the number slaughtered, 80 per cent. are taken at 65 lbs. per head, and 20 per cent. at 40 lbs. per head for mutton and lamb respectively. In the case of swine, the number of pigs born is estimated to be 11 per sow, and the rate of mortality 9 per cent. of the total number of swine. The swine slaughtered are estimated at 135 lbs. per head.[16]

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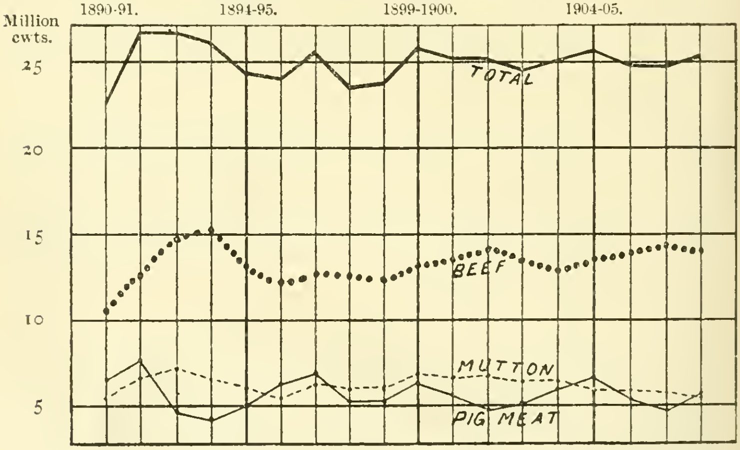
[14] Cd-4661, p. 270.

[15] *Second Report*, *Journal*, 1904, p. 368, or p. 3 of the reprint.

The method admits of a few criticisms: notably, the birth- and death-rates adopted for live stock are no more a constant factor than among the human population. Particularly is this the case with sheep, for a "good" or "bad" lambing season is notoriously a matter of moment. But there are in this country no vital statistics of this character, and we must perforce apply some "average" rate throughout. On this ground alone, therefore, the estimates can only be regarded as approximate; still I do not think errors are likely to be so serious as to disturb the broad changes indicated in the total amount of beef, mutton or pig-meat obtained by these calculations.

DIAGRAM 1.—*Home production of meat.*



It would accordingly appear that the home production of beef and veal has, on the whole, risen from probably 11,500,000 or

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[16] Cd-4661, p. 7, Q. 168.

12,000,000 cwts. about 1890-92 to 14,300,000 in 1906-07, and 13,900,000 cwts. in 1907-08. It was just 15,000,000 in 1892-93 and 1893-94; but these two maxima were quite abnormal, and represent the extent to which we drew on home supplies at that period to meet an exceptional shortage of imports; this feature will be best discussed at a later stage of this paper. The very low figure of 1890-91 was probably due to the very heavy imports of 1890.

The production of mutton and lamb is considerably less than half the national beef. From not more than 5,500,000 cwts. in 1890-91—possibly an abnormally low total—it reached 7,000,000 in 1893-94, owing to the same causes as affected beef; and, after another maximum in 1899-1900, fell off somewhat, coincidently with the decline in the number of live sheep in the country. The high figure of 1899-1900 is open to doubt; the number of sheep under 1 year in Great Britain was, relatively to the ewes (which in those two enumerations were exceptionally numerous) very low, and it seems conceivable that the large consumption was only apparent: 1900 was certainly a bad lambing season. The calculations do not allow for this; in fact, I feel fairly sure that our estimates of the mutton supply are more affected by adventitious causes, such as variations in the number of births, deaths, &c., than those of beef.

Of pig-meat we produce nearly as much as mutton—occasionally more. We have seen that the number of pigs fluctuates considerably, and as we are estimating the birth-rate at 11 per sow, it follows that the oscillations in our meat production are even more marked. So violent are they in fact, that, apart from exceptional periods like 1892-94, the alternations in our total meat production are very largely controlled by those of pigs. The output is estimated to have attained a maximum of over 7,500,000 cwts. (doubtless abnormal) in 1891-92, with a minimum of 4,233,000 two years later. Since then the highest totals have been 6,840,000 cwts. in 1896-97, 6,300,000 in 1899-1900, and 6,500,000 in 1904-05. It may be forecasted that the 5,800,000 cwts. of 1907-08 will be slightly exceeded in the current year. To the very heavy production of 1891-92, consequent, no doubt, upon the scarcity of imported live animals just at this time, may be ascribed the decline of a million pigs noted in 1892.

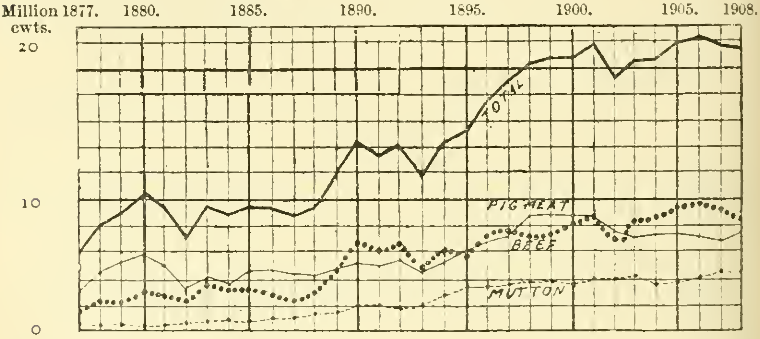
From this discussion of the three kinds of meat, the changes in the total home supply, exhibited in Diagram 1, will be readily appreciated. It commenced with some 22,600,000 cwts. in 1890-91, rose to a maximum of practically 26,800,000 in 1891-92 and 1892-93, owing to shortage of imports; after which the fluctuations—

we might almost say oscillations—correspond roughly to those of pig-meat. On the whole, however, the general trend of the curve has been slightly upwards since the early nineties.

Imports.

While the crowded condition of this country has allowed of but a slight increase in the production of meat, there can be no question as to the enormous increase in our imports. In Table III, I have given, for calendar years, the imports of meat, distinguishing the three kinds, since 1877. Beef, alive or dead, has increased from perhaps 2,000,000[17] to 8,500,000 cwts. in 1908, or 325 per cent. Mutton has gone up from some 500,000 to 4,500,000 cwts., or 800 per cent., and pig-meat from 3,250,000[18] to 7,750,000 cwts., or 140 per cent.; while the grand total shows an increase from 5,888,000 to 21,621,000 cwts., *i.e.*, 267 per cent. Now all these percentages are far greater than the increase in population, and we have seen that the home production has risen (although not per head), so that we may at once, and decidedly, draw the satisfactory conclusion that these imports have not displaced, but are additional to, the home output.

DIAGRAM 2.—*Total imports of meat.*



Let us now consider the imports more in detail. In the first place, meat comes to us in two forms—on the hoof or dead. The former have therefore to be converted into their equivalent weight as dead meat, and this has accordingly been done at the following rates:—From and including 1901 onwards cattle from the United States have been taken at 744 lbs. per head; Canada, 688;

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[17] "Preserved" beef and mutton were not separately distinguished in the earlier trade returns. The beef—as distinguished—was 1,626,000 cwts. in 1877, and I have added thereto some 400,000 cwts. of the "unenumerated" meat of that year, this being the proportion indicated when the items were separated in 1890.

[18] Allowing some 100,000 cwts. of the "unenumerated" to be pig-meat.

Argentina, 720; other countries, 560 lbs. Sheep from Canada, 66 lbs. per head; Argentina, 60; Denmark, 64; Holland, 70: United States, 60; and other countries, 65. Pigs from all countries, 112 lbs. per head. Prior to this period different rates were used for the United States as regards cattle, Canada and Argentina as regards both cattle and sheep, the following scale being adopted:—United States, cattle 808 lbs. per head; Canada, cattle 720 lbs., sheep 68; Argentina, cattle 560 lbs., sheep 65. As a result of careful inquiry among the Board of Agriculture's port inspectors in 1903 it was found that the rates taken for United States and Canadian cattle were too high, and those for Argentine cattle were too low. It was thought that the change had probably been progressive, and consequently the earlier figures since 1892 for cattle for those three countries were re-worked, the change in weight being spread gradually over the intervening years. The change as regards sheep was made in 1901. Calves were estimated at 132 lbs. a head in all years.[19] In the foreign and colonial Tables (III and IV *a*—*k*) showing the principal countries whence we derive our meat, I have converted all the live animals into dead meat at the above rates, and they thus show at a glance the total meat imported from each country during the past thirty years, in a handy form which I believe will not be found anywhere else.

Before passing on to details we may note that the maximum importation of all kinds of meat was 22,144,000 cwts. in 1906; the slight decline since is attributable to the shortage of cattle in the United States. A similar shortage occurred in 1902. The rapid increase in imports was most noticeable up to 1898, since when there has been a decided slackening; in fact the figure of 1908 was exceeded in 1901, as well as in 1905-07. This is attributable to a decline in the arrivals of pig-meat, which are now coming in at the rate of a full million cwts. less than in 1898-1901. It may be observed that imports of pig-meat showed very slow progress prior to 1895. A most interesting feature is mutton, which still increases, and has doubled itself in the past fifteen years: this is rather curious when examined in connection with the diminution of the world's flocks during the same period.

Imports from United States.

Considering first the United States (Table IV*a*), whence we have throughout the past thirty years derived the great bulk of our foreign meat, the total amount received increased from 3,775,000 cwts. in 1877 to a maximum of 13,330,000 in 1901, since when it has receded to 7,280,000 cwts. It may be mentioned that this is still nearly 2,000,000 cwts. above the total from Argentina, now the United States' most formidable competitor. Of mutton we obtain but little from this Republic, and the whole supply practically consists of beef and pig, sometimes the one and sometimes the other forming the chief constituent, but since the middle eighties they have never been far apart.

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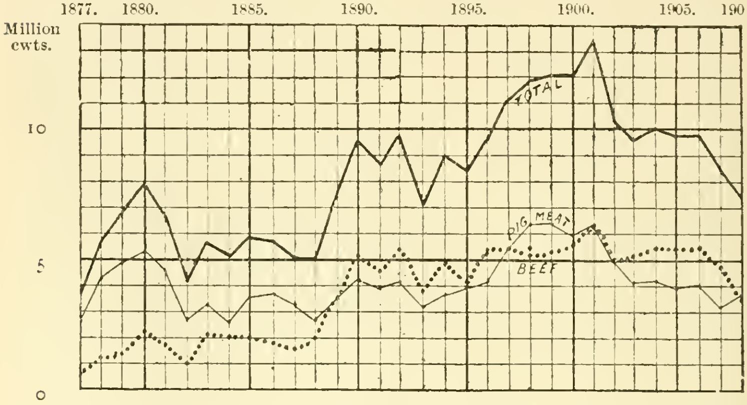
[19] Cd-4661, p. 8, Q. 181.

DIAGRAM 3.—*Imports from United States.*



Pig-meat.—The grand total of pig products received during the past thirty years has slightly exceeded that of beef. The ups and downs are very similar to those of beef, doubtless depending upon the abundance or otherwise of feeding stuffs, maize especially being freely used for fattening both animals. In the first five years pig-meat, which then formed at least two-thirds of the total, reached 5,280,000 cwts. (in 1880), and then fell away to below 3,000,000 in 1882. A gradual rise then succeeded, although the quantity of 1880 was not reached again for another fifteen years. The amount rose abruptly by a full 50 per cent. between 1896 and 1898, when it reached, and maintained for four years, a level of over 6,000,000 cwts. Since 1901, when the actual maximum of almost 6,500,000 was reached, there has ensued a rapid and progressive decline to almost exactly half that amount in 1907. This remarkable fall in recent years is to my mind the most striking feature of the United States meat trade, and I am disposed to regard it as quite as serious as the present shortage of beef, which, from its suddenness, has excited so much comment, but which, owing to that very suddenness, is perhaps of a more temporary character, and less significant of the future, than the more prolonged depression in the output of pig-meat. The small recovery in 1908, bringing the total again above beef, is possibly due to an endeavour to make good the temporary deficiency of beef.

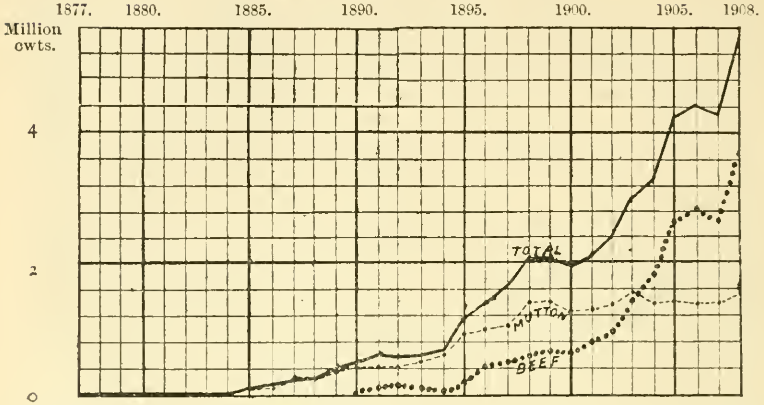
Beef.—This started at a much lower level in 1877, doubtless owing to the public taste, which freely accepts salted pig-meat (bacon, hams), while salted beef is more grudgingly eaten. In those days the refrigerating industry had, of course, not been established, and thus pig-meat, preserved by salt, could be transported for long distances, and still be landed in its most acceptable form. [This explains the comparatively small increase, noticed a few paragraphs above as being only 140 per cent., in our total imports of pig-meat. This trade was then in a much more forward state of development; in fact, it formed in 1877 much more than half our total meat imports, and nearly four-fifths of it came from the United States, while pig-meat is now only about a third of the total.] With the inventions of freezing and chilling, however, the beef trade increased, slowly at first; and the pig imports were surpassed in 1889, the only subsequent years in which we have received an excess of pig-meat being 1898-1901, and again 1908. Beef imports suddenly expanded in the two years 1889 and 1890, abruptly raising themselves from a level of about 2,000,000 cwts. to one of 5,000,000 cwts.; and they have since varied between 4,000,000 cwts. and 6,000,000 cwts. (until 1908), a maximum of 6,400,000 cwts. occurring in 1901. The fall to some 3,360,000 cwts. in 1908 is very sharp, and this represents the smallest amount of beef received from the U.S.A. for precisely twenty years. This sudden drop is attributable to a great shortage in the United States maize harvest of 1907, which will be discussed, under the heading of *Prices*, later on.

Imports from Argentina.

Argentina (Table IV*c*) has for at least a decade held second place among the countries supplying us with meat, and the 5,500,000 cwts., or thereby, received thence in 1908 reduces the gap between it and the United States to a matter of 2,000,000 cwts. only. Although at one time large numbers of animals were received alive from this country, yet the trade thence may fairly be said to have been developed by refrigeration; we were getting over half a million carcasses annually before the sheep received on the hoof numbered 500. Unlike the United States, we derive no pork from Argentina; its place as meat being taken by mutton. For many years—until 1890 in fact—mutton formed practically the entire meat export. The quantity first attained 100,000 cwts. in 1885, and developed steadily until we were receiving thence something like 1,500,000 cwts. in 1903. Since then the quantity has been nearly stationary, with a recrudescence to 1,560,000 cwts. (a maximum) in 1908.

But the great feature of the trade in recent years has been beef: it may be said to have "begun" in 1891, commenced its upward

DIAGRAM 4.—*Imports from Argentina.*



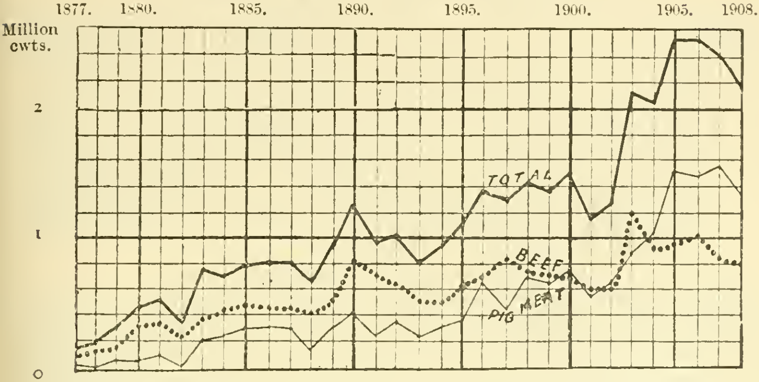
march in 1895 (since when a drop is to be noted in but a single year—1907), overtook the mutton exports in 1904, and finally in 1908, with some 3,600,000 cwts., overtook the United States, and took premier place among our purveyors of foreign beef. In connection with the Argentine trade, allusion may be made to the transient effect of our legislation regarding diseases of animals upon the meat supply from that country. Imports of live stock thence were prohibited in 1900, owing to an outbreak of foot and mouth disease: it will be observed that there is but the very slightest trace of a break in the continuity of the curves at that period, and the United Kingdom's supplies of meat remained entirely unaffected. The instantaneity with which Argentine exporters transformed their live stock trade into a dead meat one is most remarkable.

Argentina's neighbour, *Uruguay* (Table IV *d*), has made noticeable progress in quite recent years.

Imports from British North America.

Canada (and Newfoundland) with some 2,500,000 cwts. (less in 1908) ranks as the third country among our purveyors (Table IV*b*). Its trade resembles that of the United States in that it consists entirely of beef and pig-meat; but it differs chiefly in that its most rapid development has taken place since 1895 (apart from apparently temporary checks in 1901 and 1908); *i.e.*, at the period when the United States are at least slackening their rate of increase. Such a state of affairs, in view of the more recent settlement of the Canadian north-west, is natural. It differs also in that the relative movements of the pig and beef trade are reversed; in Canada exports of beef were consistently above those of pig-meat (they were just double in 1890) until the end of the century, since when the latter have doubled. From both countries, it may be noticed, the quantity of bacon is about three times that of hams; fresh and salt pork forming but an insignificant item.

DIAGRAM 5.—*Imports from British North America.*



There is a certain amount of cross-traffic in the exports from the United States and Canada, and I accordingly give below the actual countries of consignment (available for 1903-07 only) for the same items as appear in Table IV:—

Quantity of meat consigned from the United States and Canada to the United Kingdom.
[In thousands of cwts.]

Year.	Consignments from United States.				Consignments from Canada.			
	Beef.	Mutton.	Pig-meat.	Total.	Beef.	Mutton.	Pig-meat.	Total.
1904....	5,439	151	3,797	9,637	987	64	1,292	2,352
'05 .	5,378	85	4,327	10,077	1,030	27	1,158	2,232
'06 ..	5,331	41	4,537	10,182	1,086	17	934	2,048
'07....	4,985	41	3,855	9,140	740	21	931	1,703

It will be observed, upon comparison with Table IV (*a* and *b*), that United States pig-meat especially reaches us *viâ* Canada.

Imports from Australia.

The imports from this country (Table IV, *e*) are of a very remarkable character, and the terrible droughts that influence the number of stock kept are only too faithfully reflected in the exports. Owing to the impossibility of shipping live animals from so great a distance, this trade, like that of its neighbour, New Zealand, owes its inception to the refrigerating industry. Some amount of "preserved" meat is recorded as arriving thence in the very beginning of the period under review, and "fresh" mutton is entered in our trade returns in the first year that this class of meat was distinguished, but for practical purposes we may regard the trade as beginning to assume material proportions in 1890.

From 200,000 cwts. in that year it rose steadily to a maximum of over 1,500,000 cwts. in 1896-97, then declined almost to extinction

DIAGRAM 6.—*Imports from Australia.*

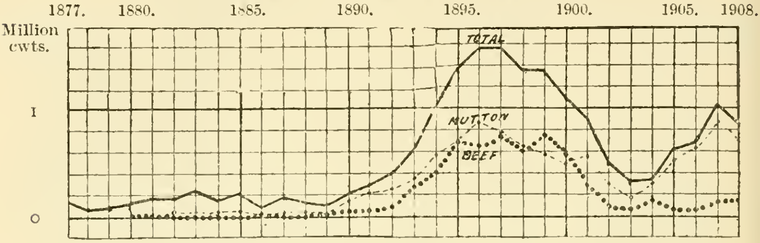


DIAGRAM 7.—*Imports from New Zealand.*

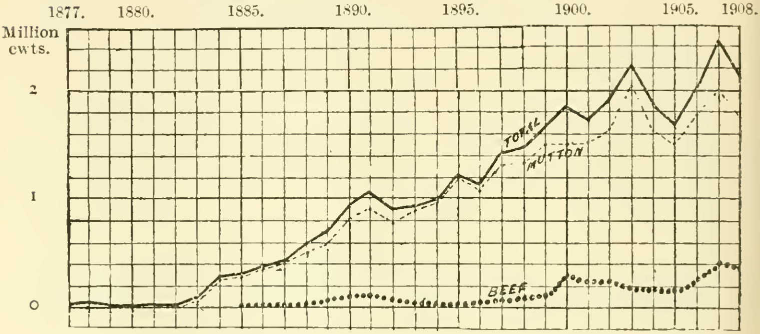


DIAGRAM 8.—*Imports from Holland.*

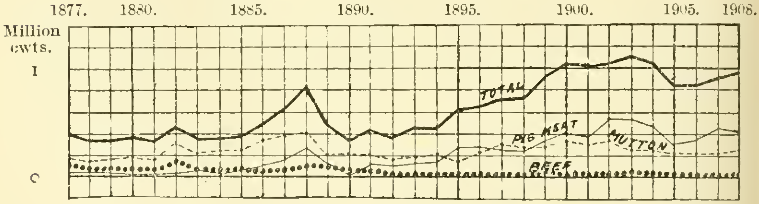
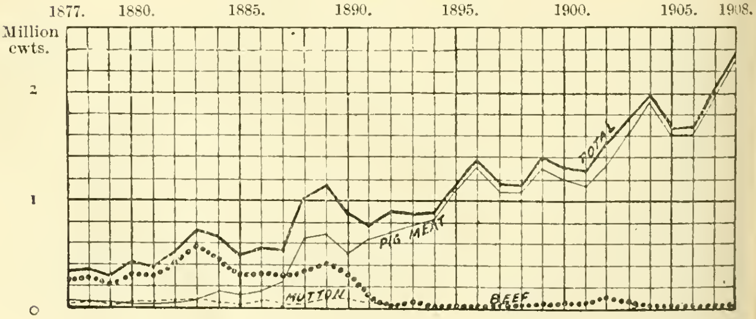


DIAGRAM 9.—*Imports from Denmark.*



(336,000 cwts.) in 1903, then recovered and reached 1,000,000 cwts. in 1907. Australia is generally regarded here as an exporter of mutton, but she also sends considerable quantities of beef; and, as a matter of fact, during the late nineties we obtained thence as much beef as mutton, more in 1899-1900. The two kinds of meat come from different parts—the beef from Queensland, with a little from New South Wales (? the northern districts); the mutton from New South Wales, with substantial amounts from Victoria, and subsidiary quantities from South Australia. It may also be observed that the beef curve tends to lag behind the mutton, both maximum and minimum occurring at a rather later date.

Imports from New Zealand.

This island does not appear to suffer from drought to the same extent as Australia, and the record of its export trade (four-fifths consisting of mutton or lamb) is one of steady and fairly rapid progress since 1882, broken only in 1904-05, and again in 1908 (see Table IV*f*). This Colony is now running Canada very close for the third position among the trans-oceanic butchers of the United Kingdom.

Imports from Europe.

At the commencement of the period, a considerable percentage of our foreign meat came from Europe, particularly in the shape of live cattle, Germany, Holland, and Denmark being the principal contributors. Moreover, Spain, Portugal, and Sweden each sent us from 10,000 to 20,000 head of cattle annually during the first decade under review; Belgium (? Germany) sent large numbers of sheep, amounting to some 100,000 in number, in 1882-83; and other countries were occasionally heavy exporters. Now, of course, the trade in live animals from Europe (except Iceland) is prohibited; but these countries, unlike their trans-oceanic competitors, have not transformed their live stock into dead meat for our consumption, with the sole exception of Denmark, and to a lesser extent Holland.

Our most important contributor prior to 1885 was Germany (Table IV*g*), which sent us from 700,000 cwts. to 1,000,000 cwts. annually, the latter figure being reached in 1884, after which year the trade dwindled rapidly, and may be said to have been extinguished by 1891. The bulk of it was bacon, the weight of which was practically equal to the total of beef and mutton, these two latter being, however, alive. It may be mentioned that, in addition to the amounts officially recorded as received from Germany, that country now annually sends us some 50,000 live sheep, which are slaughtered at Rotterdam for the British market, the resultant 20,000 to 30,000 cwts. of dead mutton being of course credited to Holland in the trade returns.

The Dutch trade (Table IV*j*) was mainly mutton, alive until 1891, a maximum of over 800,000 cwts. of all kinds of meat being reached in 1888. Since the new century, again, the total meat from Holland has averaged nearly 1,000,000 cwts. The mutton receipts in 1888 were exactly 400,000 cwts., mostly alive, since when they have been fairly stationary at 200,000 to 300,000 cwts., the highest figure (344,000) of recent years occurring in 1902. In 1908 we received 267,000 cwts., a slight increase over 1907. Fresh pork has, however, been the main commodity from Holland since 1898, and this item shows a general, though rather erratic, rise between 1890 and 1903, with some decline since. Indeed, we get more fresh pork from Holland than from any other country.

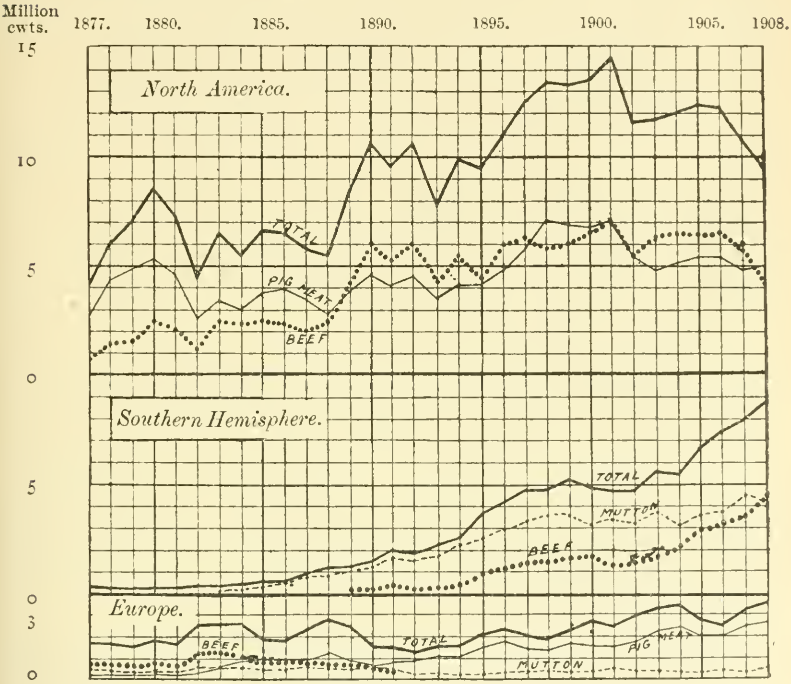
Denmark (Table IV*k*) has been alone among European countries in developing a dead-meat trade with this country. In the earlier years its exports were almost entirely live cattle (with some Iceland sheep). Live cattle reached a maximum of 557,000 cwts. (dead weight) in 1883, and the trade dwindled to half that amount in 1890, after which it was practically extinguished. No serious attempt was made to convert the cattle into beef, although, when prices over here are good, the Danes occasionally send us some, notably about 1902, and we have again received consignments in the early months of the present year. The great development of the bacon trade (no hams, we get these from North America) may be regarded as dating from 1883, and in 1908 we imported over 2,000,000 cwts. of bacon, or fully four-fifths of the United States total. I quite expect to see Denmark take first place with this commodity in a very few years' time.

Imports from Belgium are shown in Table IV*h*.

This examination may be usefully summarised by dividing the world into three parts (see Table III); as the course of trade in these groups as a whole is much more significant than that from particular countries, and it is progressing in quite a different manner from these three quarters. I have adopted the same grouping in Table I, viz.: Europe (including Algeria and Asiatic Russia), North America, and the Southern Hemisphere. I should add that in the import tables I have taken account of Chile in the latter, otherwise the countries are only those named in Table IV, viz., Argentina, Uruguay, Australia, and New Zealand. Similarly, my North America consists solely of the United States and British North America. The tiny quantities occasionally received from other parts of the world thus fall into Europe: I think I am right in saying that in no single year do they collectively amount to 500 cwts., and thus my figures, which give totals in thousands only, are correct.

The course of trade from these three quarters of the globe is shown in Diagram 10. From North America, at present the most important, the trade rose steadily until a maximum was reached in 1901, which looks like proving the turning-point, and there has been a falling off since. From the Southern Hemisphere, which entered the arena in the late eighties, progress has been, and still is, rapid—though interrupted shortly after the commencement of the new century by Australian droughts: this quarter has not reached its maximum yet, and last year sent only just a tenth less than North America. From Europe the trade has been, on the whole, nearly stagnant, although, thanks to Danish enterprise, it shows some increase of late years; but the character of the trade has largely changed (pig-meat taking the place of beef).

DIAGRAM 10.—*Imports from main divisions of the world.*



Beef is now arriving in about equal quantities from North America and the Southern Hemisphere; mutton almost entirely from the Southern Hemisphere; and pig-meat from North America and Europe, the latter now contributing rather more than a third of the whole.

Consumption.

I ought perhaps to apologise to earlier authorities who have written upon the meat supply of this country for not discussing their estimates or endeavouring to co-ordinate them with the official figures reproduced here. To do so would, however, merely be to abridge the very complete and ample summary by Mr. R. H. Rew in this *Journal*,[20] in which all the important estimates are put together; moreover, the various data adopted make it very difficult to ascertain their exact degree of comparability either with each other or with those based on the Society's investigations. For the latter reason I do not propose to carry any comparisons of home production or consumption back beyond the nineties. It may be observed, however, that the recent figures do not show any very startling discrepancies when compared with some of the abler earlier estimates: indeed, they may be said to bear testimony to the excellence of the work previously done in this direction by several authors. Since the date of Mr. Rew's article, the only other important contributions to this subject that I am acquainted with are those of Mr. R. E. Turnbull.[21]

The total meat consumed may be taken as the sum of that produced and that imported (less exports). Considering the period since 1890, we have the data shown in Table V, which are exhibited succinctly in the accompanying diagram (11). Here it has been necessary, owing to the method of calculating the home production, to adopt the "meat year," and the imports are for the year June—May, the figures being taken from the monthly trade returns. The conversion of live into dead meat has, of course, been made in exactly the same way, and at the same rates, as the imports for calendar years.

The total consumption of beef (including veal) increased from, perhaps, 18,000,000 cwts. about 1890-92 [I cannot regard any single year in the first quinquennium as representing the normal position] to 22,845,000 cwts. in 1907-08, a maximum of 23,600,000 cwts. having been recorded in the two immediately preceding years. The home production now forms 60 per cent. of the total supply, the average of the first quinquennium having been 69 per cent. The maximum home percentage was 73·8 per cent. in 1893-94; the minimum, 58·4 per cent., in 1905-06, when foreign imports were at their highest, and the recovery to 60·8 last year is due to the (probably temporary) shortage from North America.

Mutton in the same period increased from probably 8,000,000 cwts. to over 10,000,000 cwts. Here the maximum (10,445,000 cwts., as

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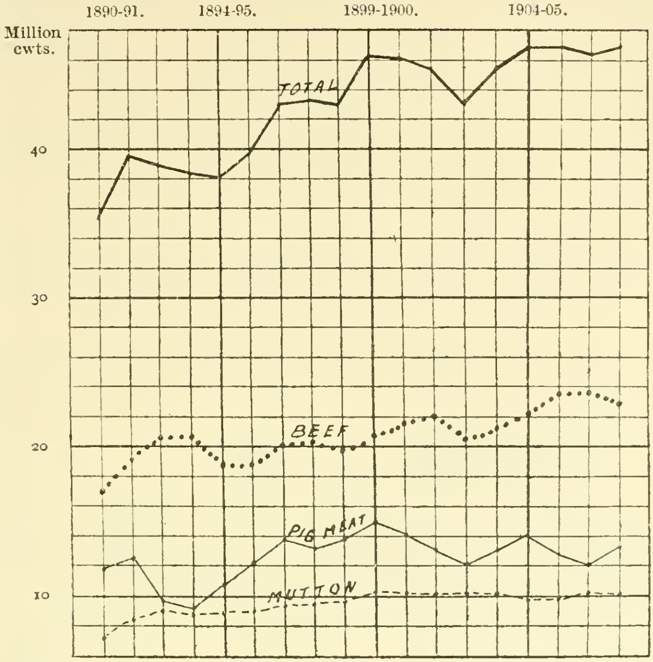
[20] Vol. lxv, 1902, p. 666.

[21] His latest is in the *Live Stock Journal*, 26th March and 2nd April, 1909.

DIAGRAM 11.—*Consumption of meat in United Kingdom.*



to which I am a little sceptical) occurred in 1899-1900, and the quantity has been, upon the whole, fairly stationary since. This is owing chiefly to the reduction in the home flocks of sheep up to 1905, while imports, although ever increasing, have done so at a slackening rate in the past ten years (with a spurt in the last two). In spite of the increase since, the home production in 1907-08 was but 55·9 per cent. of the total, the lowest on record; it was probably 76 per cent. at the beginning.

The supply of pig-meat has risen from 11,800,000 cwts. in 1890-91 to 13,450,000 cwts., and the United Kingdom supplied 55 per cent. of the total in the earlier year, as compared with 43·1 per cent. last year. The totals and percentages are, however, so dependent upon the oscillations in the home supply that single years give an even less reliable idea of the movement than with beef and mutton. The maximum was 60·1 per cent. in 1891-92 (owing, doubtless, to shortage of other imported meat), while the minimum has been as low as 36 per cent. (1901-02). On the whole, it is clear that the foreign supply has increased more rapidly than the home, but it is not easy to measure the amount of change.

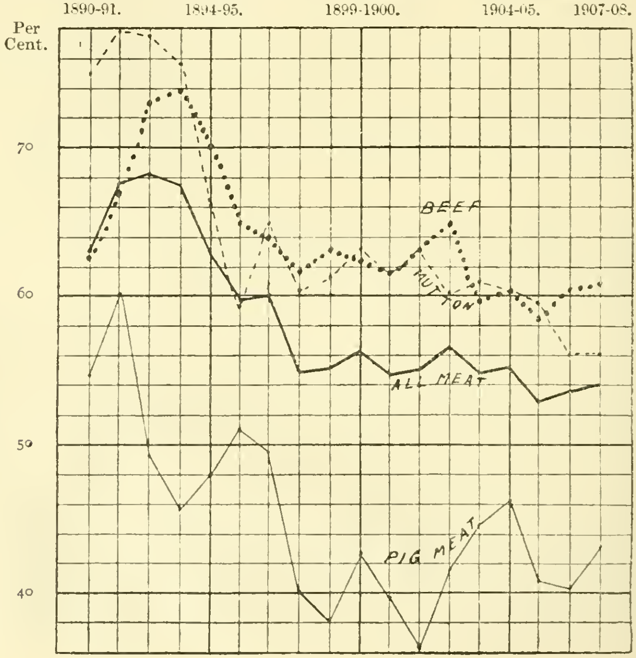
The total of all kinds of meat includes a certain quantity of "unenumerated" imported meat, which cannot be allocated to either of the three main groups, but which probably consists largely of these items (and mainly beef and pig-meat). The grand total shows an increase from some 36,000,000 cwts. in 1890-91 to 46,850,000 cwts. in 1907-08. This is the largest total yet estimated. The percentage that was home produced may probably be taken to have been about 65 per cent. at the commencement (the first quinquennium is quite abnormal), and 54 per cent. last year, the minimum (53·2 per cent.) occurring in 1905-06. If we accept quinquennial averages as the best guide to the relative trend of home and foreign meat during the past dozen years, at least in the case of beef and mutton, we have the following results :—

Percentage of home to total supply of meat.

	Beef.	Mutton.	Pig-meat.	All meat.
Average, 1890-91 to 1894-95	69·1	74·3	51·6	66·0
,, '95-96 ,, '99-1900	63·4	61·8	44·3	57·1
,, 1900-01 ,, 1904-05	62·0	61·2	43·7	55·3
,, '05-06 ,, '07-08 (3 years)	59·9	57·2	41·4	53·7

But, after all, a far better picture of these relative movements than any discussion of the figures is afforded by diagram 12.

DIAGRAM 12.—*Percentage of home supply to total consumption.*



Taking the Registrar-General's estimates of population, the following table shows the estimated consumption per head in the period under review, taking quinquennial averages :—

Consumption of meat per head in the United Kingdom.

[In lbs.]

Average	Beef.			Mutton.			Pig-meat.			All meat.		
	Home.	Foreign.	Total.	Home.	Foreign.	Total.	Home.	Foreign.	Total.	Home.	Foreign.	Total.
1890-91 to 1894-95	39	17	56	19	6	25	16	15	31	74	38	112
'95-96 ,, '99-1900	35	20	55	16	11	27	17	21	38	68	52	120
1900-01 ,, 1904-05	36	22	58	16	11	27	15	21	36	67	54	121
'05-06 ,, '07-08 (3 years)	36	24	60	15	11	26	13	20	33	64	55	119

These figures do not tell the whole tale. There is a big increase between the first and second quinquennium, partly no doubt in consequence of causes which will be discussed immediately below. Had the last three years been normal, we should doubtless have seen the total greater than appears; they are unduly affected by the shortage from North America, and also by the home pig supply attaining a minimum in its periodicity in the middle of this triennium. The ordinary total consumption may, I think, certainly be regarded as being nowadays over 120 lbs. per head; the next five years should show this unmistakably.

The above are the broad outlines which may be noticed in the statistics of meat consumed in this country during the past eighteen years; but there are three periods to which special attention may be drawn.

The first of these is 1892-94. It will be observed that imports of meat were abnormally low in 1893, and that the percentage produced at home took a sudden leap upwards. This was to some extent the result of Parliamentary legislation, and, at this distance of time, it is possible to measure with considerable precision the immediate effect of the Contagious Diseases of Animals Acts, and Orders made thereunder, upon the supply of meat. At that time

Parliament, following and confirming restrictive Orders made in immediately preceding years, definitely prohibited the landing of live stock from practically all European countries and elsewhere, and required the compulsory slaughter upon landing of stock imported from North America and a few other places. This stopped the European live-meat trade, and (coupled apparently with a shortage of export cattle in America in 1893) caused a drop in our total imports, as between 1890 and 1893, of some 300,000 live cattle, 300,000 sheep, and perhaps 20,000 swine, or an equivalent of fully 1,750,000 cwts. of meat—mostly beef. To meet this deficiency of live animals, which the foreigner was not then able to convert instantaneously into dead meat, consumers drew largely on the home stock; and as has been seen from Diagram 11, they did not run short. In fact, there was as great abundance in 1891-94 as previously; prices, moreover, were not enhanced. This restriction of the live import trade is thus the cause of the depletion of our flocks and herds which I pointed out when discussing the number of animals in the country as shown by our annual enumerations. The slaughter for food of some 750,000 cattle and 3,500,000 sheep—a temporary reduction in stocks made good in two or three years' time—represents the price paid for providing against the introduction of various cattle diseases. I suspect, moreover, that while the consumer did not suffer, farmers rather profited than otherwise.

It may not be out of place to remark here that a decrease in the total number of animals between one census and another is not by any means, as seems frequently assumed, a matter necessarily to be deplored. It often merely means that we eat more, and is probably usually to be taken as an indication that there is a good healthy demand in the markets, with sufficiently remunerative prices, and consequently that the industry is in a very sound condition. Emphatically is this the case when the number of breeding stock is maintained (or increasing) at the same time, and it is this latter barometer that our Honorary Secretary, in his Report on the Agricultural Returns, so rightly consults.

The other two periods calling for special mention are 1901-03 and 1907-08, which may be taken together. They may be ascribed to identical causes, viz., a shortage of cattle in the United States. In both cases there is a rise in the proportion of home-produced beef. The cause in 1902-03 is not disconnected with the deficient maize harvest of 1901 in the United States, which was only 75 per cent. of the average of the preceding triennium. This enhanced the price of corn so that it no longer paid sufficiently to feed cattle, which are largely fattened on this grain. The result was that large numbers were prematurely slaughtered, with a consequent scarcity of finished beef later on. Very similar conditions prevailed in 1907: a comparatively short maize harvest (2,590,000,000 bushels) is stated to have forced the slaughter of a large number of calves in the United States, and there is evidently considerable scarcity there now. The 1908 maize harvest (2,669,000,000 bushels), although but slightly larger than that of 1907, appears to be of better quality, the proportion of "merchantable" corn in 1907 having been abnormally low. Still it does not look as if it would be specially remunerative to fatten cattle this year in the United States at much below current prices.

Prices.

Reliable official prices of live stock and meat, extending over a long series of years, are not very numerous. In Tables VI—VIII, I have given, for the years 1877-1908, the quotations reproduced regularly, and mainly from unofficial sources, in the Agricultural Statistics, of live cattle and sheep (three qualities) at the Metropolitan Cattle Market, Islington; of beef and mutton at London (Central Meat Market, Smithfield), Liverpool and Glasgow; as well as the average declared values of imported beef, mutton, bacon and hams. I hesitate to lay great stress upon the price records in any particular year, as it is not clear what they all precisely represent. The prices of live cattle and sheep are compiled from quotations originally published in newspapers every week. The dead-meat prices, from various sources, are quoted as a range, but distinctions of quality are not made, and the quotations are left as a somewhat wide range. Comparison with the recent official prices of the Board of Agriculture, available for the past five years, seems to show that this range—at least at London—is from the lowest foreign to the highest British. The import values, as is well known, represent the value of the goods as declared by the importers.

It is not quite clear how far these live stock and dead-meat quotations are always comparable, but I am of opinion that the annual averages may be taken as a fair guide to the general trend of prices during the past thirty years. I do not know if there has been any change in the method of quoting or grading, though there is one suspicious point, viz., that the records of third quality (live) cattle and sheep at London, instead of rising with first and second in 1888, after the five years' steady decline, fell away still further (see Diagram 13); and it would seem that the gap between third and second quality was permanently widened after 1887, pointing to an alteration of classification. It is clear, therefore, that we must treat these third quality prices with caution. It will be observed, also, that the fluctuations in them are—in the last twenty years—generally more violent than in the superior grades, particularly with cattle: it will perhaps be maintained that this greater steadiness of first quality is normal, and due to the axiom that "the best will always fetch its price."

To get an idea of the changes in the price of "British" beef and mutton during the thirty years, I have averaged the London, Liverpool, and Glasgow quotations. Not that I infer that this mean represents the prices ruling generally in Great Britain—being returned from three of the biggest consuming centres they may quite likely be different from the average of town and country markets—but the movements are doubtless parallel to those of the true mean.

There is great diversity in this country in the methods of selling live stock, and, to a less extent, meat. In the greater part of England the practice with cattle is nominally to pay a certain price for the beast; in determining this price the buyer exercises his judgment as to what amount of dead meat the animal will yield, and then offers accordingly. For purposes of quotation the amount is then converted into so much per stone (estimated dressed carcass weight). The rest of the animal—hide, hoofs, offal of all kinds, &c.—is thus not mentioned in the transaction, although naturally the purchaser gets it. Such prices are quoted technically as "per "stone (sinking the offal)." The stone, again, in London and one or two neighbouring places is an 8-lb. stone; elsewhere it is the ordinary 14 lbs. In Scotland and many places in the north of England a totally different system prevails: the animal is sold at so much per cwt. live weight. That is, the beast is estimated to weigh so many cwts. as it stands (it is frequently actually weighed), and priced accordingly. Or the buyer may simply give so much per head, and the amount is converted for purposes of quotation into the equivalent per live cwt. In Tables VI and IX I have reduced the prices to the 14-lb. stone (sinking the offal); but this cannot be well done for Scotland without assuming a ratio between live and dead weight, and I have left the prices per live cwt. in the case of Scotch cattle. Dead beef is usually quoted per lb., the chief exception being London, with its 8-lb. stone. I have converted all prices to the 14-lb. stone, so as to have them in closer juxtaposition to the live animals.

Sheep are usually sold per head and quoted per lb. (also estimated dressed carcass weight)—per 8 lbs. in London: the dead meat is usually quoted per lb. Here also the question of "offal" is important, and it will be seen later that the price per lb. paid for a sheep depends upon whether it is sold in the wool or clipped. I have reduced all quotations to the lb. Pigs are usually quoted by the stone (dressed carcass weight), but over a large part of the Midlands the "score" (*i.e.*, 20 lbs., not 20 pigs) is the customary unit. I have reduced all prices of pigs and pig-meat to the 14-lb. stone. The Scottish practice as regards sheep and pigs conforms generally to the English: selling by live weight is comparatively rare, but is increasing.

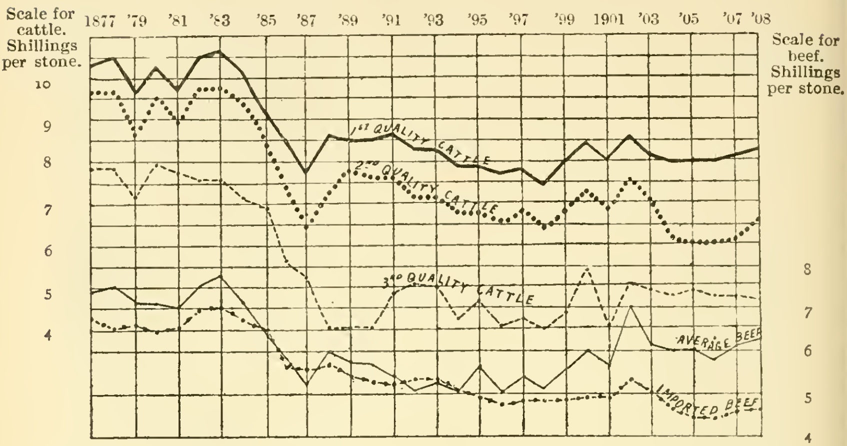
In consequence of this method of quoting prices, some of my tables and diagrams present a paradoxical appearance, in that the price of the raw product (the live animal) appears higher than that of the meat derived from it. A butcher purchasing an ox at, say, 8*s.* per stone, will sell the dressed meat at perhaps 6*s.* 6*d.* or 7*s.* per stone. This merely means that the price he gets for the hide, offal, &c., is greater than the cost of cutting up the beast plus his reasonable profit on the carcass. It must be carefully borne in mind in studying the diagrams that the price per [lb. or] stone for live animals is "sinking the offal," *i.e.*, the price of [one or] 14 lbs. of meat plus a certain amount of offal, whereas that for dead meat is for the actual [one or] 14 lbs. of meat only.

The changes in the last thirty years may be best exhibited, subject to the qualifications discussed above, by means of the two diagrams of beef and mutton (13 and 15), on which I have plotted the three qualities of live stock at London, the "British" average of dead meat, and the value of imported fresh meat. The import values of pig-meat (fresh pork, bacon, and hams—I have no home prices available) are shown in Diagram 17.

Beef.—The first feature in the beef diagram is the high level of prices prevailing until 1883-4, followed by the rapid drop in the next three years to a well-marked minimum in 1887. This fall apparently rather overshot the mark (a usual but generally unnoticed phenomenon in economics), and there was a little recovery next year, when prices reached a level that has been, roughly speaking, maintained for British produce ever since. A remarkable point about this rapid fall is that imports of beef happened to be *declining* with equal rapidity at the same time: from 3,736,000 cwts. in 1883 they dropped to 2,517,000 cwts. (or by 33 per cent.) in 1887! And imports of beef more than doubled in the next three years while prices were rising! Home stocks of cattle, moreover, increased by a million between 1882 and 1886, and had decreased to 10,268,000 in 1888, indicating that home production had probably been in the same direction as imports.

What then caused this sudden collapse in prices? The only suggestion I can offer is the sudden discoveries in the means of

DIAGRAM 13.—*Average prices of cattle and beef*, 1877-1908.



preserving beef fresh enough to land it here from great distances. It *may* have been partly that, though less meat was imported, a greater bulk of it was of so much better quality as to be a more severe competitor to home produce—and this is possibly not inconsistent with the much greater fall of third quality British cattle. But I believe that it was very largely a case of *expectation* of competition; *i.e.*, the realisation of the new era that was dawning frightened prices down before the dawn.[22] This is not contradicted by the course of prices in 1888-90, which remained unaffected by an increased importation from 2,500,000 to 6,700,000 cwts. of beef, accompanied by heavier consignments of mutton and pig-meat. In fact, it looks as if the coming competition had been discounted three years in advance. The value of imported beef did not fall to anything like the same extent as British produce, but the fall continued after 1887, with only a slight check in 1888, though at a less rapid pace.

From 1891, the curves follow somewhat different courses. First and second quality fell slowly again, until an absolute minimum was reached of 7*s.* 5*d.* per 14-lb. stone for first quality in 1898. This was followed by a rise, and the corresponding price (8*s.* 7*d.*) in 1902, consequent upon the short importations, was the highest since 1888 and 1891. It has still remained at a relatively high level since, ending with 8*s.* 4*d.* in 1908. My "average" dead-beef price reached a minimum in 1896 (under 5*s.* per 14-lb. stone), since when it has been gradually rising, and 7*s.* was touched in the "famine" year of 1902. Imported beef has been falling quietly and persistently during practically the whole period, excepting only in the scarce times round 1902 and now; although there is no doubt that the quality of the refrigerated produce has immensely improved in recent years. The absolute minimum was reached in 1905 (4*s.* 5*d.* per 14-lb. stone).

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[22] It must not be overlooked that this was a period of trade depression, and all prices were declining at the same time (*cf.* Mr. Sauerbeck's index-numbers). Still, that the prices should have moved as they did in the face of such very diminished supplies is remarkable.

The different behaviour of the curves since prices established themselves at their modern level is, I think, worth a little notice. The decade 1880-90 may be regarded as the transitional period when the British producer had to adapt himself to the changed conditions; in fact, between the periods indicated in my exordium when he had to compete only with his fellow-countryman or the inhabitant of contiguous European countries, and the period when the whole world's supply and demand dominated the price.

The continued decline of the import values is also of interest. The fact is that the imported stuff has varied enormously in quality during the past twenty years, owing to various causes. First there has been the change from freezing to chilling as a preservative in the case of the trans-oceanic produce: this has of course improved the quality and rendered it more analagous to the native commodity. On the other hand, there has been the increasing proportion received from Argentina, and this being (at least till recently) frozen, has tended to diminish the average quality of the bulk. These two factors are thus in opposition, and I take it that the low-priced Argentine produce has in recent years carried the most weight. On the third hand (if I may be pardoned an expressive "bull") the processes of both freezing and chilling have no doubt greatly improved in their respective degree. All these gradual substitutions of one form of beef for another, which are still in progress, doubtless account for many divergences in the relative values of the different grades of beef and mutton. The distinction of fresh, chilled, and frozen meat is now, it may be mentioned, receiving recognition in the Trade and Navigation Accounts. Judging by the monthly trade returns since January last, "fresh" meat is entirely European; "chilled" comes from North America, and over a third of the South American consignments at present fall into that category; the remainder of the South American, and all the Australasian shipments are "frozen." Nearly half the beef is now chilled; almost all mutton is frozen, and pork is fresh.

Official prices.—For several years past the Board of Agriculture and Fisheries have, under the Markets and Fairs (Weighing of Cattle) Act, 1891, obtained returns of the number and prices of cattle, sheep, and swine weighed at certain specified towns in Great Britain. Some changes have from time to time been made in the markets scheduled for this purpose, and the details, while recording the movements at such places from year to year, do not, for various reasons, lend themselves to an accurate comparative statement extending over the whole period. At twelve towns, however, the records may be regarded as sufficiently reliable to be used for such a purpose since 1899, at least in the case of cattle, a large number of animals being weighed and priced at each. Moreover, in so far as these towns may be regarded as representative of Great Britain, we may form from them an average price of fat cattle, the total number of animals utilised for this average being considerably over 100,000. The practice of selling sheep and swine by actual live weight is much rarer. The towns included in the following table are: Carlisle, Leeds, Leicester, Liverpool, London, Newcastle, Shrewsbury, Aberdeen, Dundee, Edinburgh, Glasgow and Perth. The disproportionate number (5) in Scotland is due to the practice, alluded to above, of selling there by live weight; this applies also to the north of England, and London is the only southern market admissible. Hence the preponderance of Scotch and northern markets. The average prices work out as follows (per live cwt.):—

	1899.		1900.		1901.		1902.		1903.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
England	33	4	34	11	33	9	35	5	34	1
Scotland	33	8	35	3	34	1	36	2	34	6
Great Britain	33	7	35	2	34	0	35	11	34	4

	1904.		1905.		1906.		1907.		1908.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
England	33	1	32	8	32	6	33	6	34	2
Scotland	33	9	33	0	33	0	33	9	34	8
Great Britain	33	7	33	11	32	11	33	8	34	7

It will be observed that, so far as they go, these figures follow precisely similar movements to those already noted in the longer series. Prices of cattle are higher than three or four years ago, but farmers have not realised as much as in 1902 or even in 1900.

Besides this set of prices, returned under the Act of 1891, the Board have for the past five years been obtaining regularly, week by week, prices of all kinds of agricultural produce from a great number of centres in Great Britain, special attention being paid to live stock because, as we have seen, there are very few data available regarding this commodity. As the first quinquennium has only just been completed, we are now in a position to form a tolerably satisfactory idea of what may be regarded as the ordinary prices of live stock and dead meat in this country. I think it is worth while examining a little more closely the recent high prices in the light of the monthly averages, more especially as these latter bring out a few matters of economic interest which, although well known in the trade, are probably not familiar to many Fellows of this Society. In Tables IX—XIV I have accordingly reproduced, from the statistics laid before the Departmental Committee on Meat Combinations,[23] the Board of Agriculture's average prices for each month of the past five years, adding a column for the quinquennial average. In order, however, to exhibit more clearly the unusual features of 1908, I have, in the accompanying diagrams (14, 16, 18) plotted the 1908 prices in comparison with the average for the *four* years 1904-07.

Prices of cattle and beef all show a fairly similar trend throughout the year. Commencing at a particular level in January, there is at first a tendency to remain steady, or even slightly fall, this movement being followed by a rise in spring to a maximum in June and July. Then prices fall steadily to a minimum in November, with an abrupt little rise in December. These movements are perfectly normal, and are the result of the two different methods of feeding cattle in winter and summer. During the winter and early spring we are getting stall-fed cattle, which may be regarded generally as giving the finest meat. As spring advances these stall-fed cattle gradually become exhausted, and the price begins to rise, and goes up until the early summer, when there are very few left, and the second class of cattle—the grass fed—are mostly not yet ripe. Hence we get a sort of interregnum between the two forms, a period sometimes alluded to as the June scarcity.[24] As the summer goes on the grass-fed become more abundant, and the price falls. In the late autumn the low price is due, not always so much to abundance, although there are plenty, as to the frequent comparatively poor quality; and there is moreover a marked tendency to hold the best beasts for the Christmas markets. The lack of quality was a very noticed feature in the autumn of 1908. In December we are getting stall-fed cattle again, and there is a keen demand in that month, the animals moreover being of unusually good quality. We *will* have beef at Christmas, and, as the curves show, we have to pay for it.

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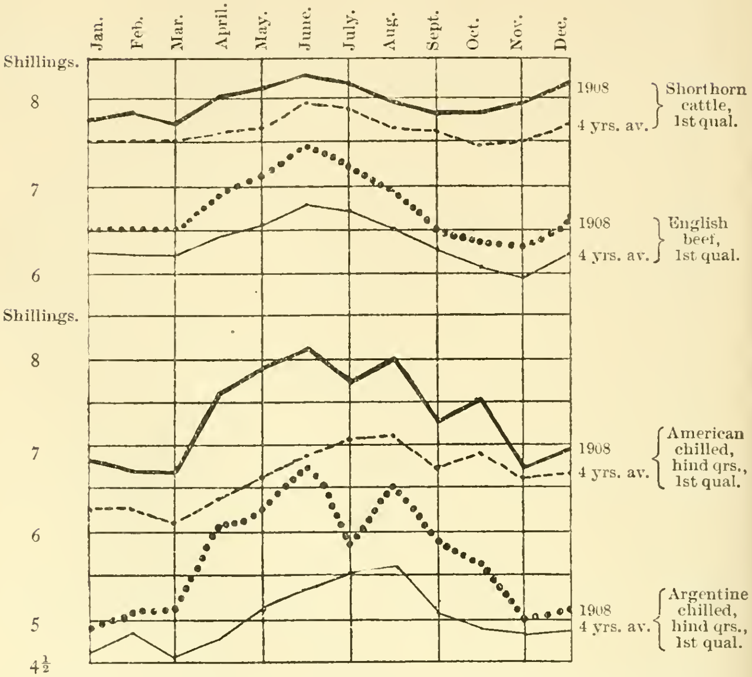
[23] Cd-4661, pp. 249—56.

[24] There is probably less demand for meat in hot weather, but it will be observed this is insufficient to prevent a rise in price due to an even more restricted supply.

DIAGRAM 14.—*Monthly prices of cattle and beef.*

Per 14-lb. stone.



The actual quinquennial averages (Table IX) show this ordinary movement rather better than the diagrams, and I think that they are probably more representative of the normal. For instance, I imagine that the October-November minimum would generally be at least as low as, if not lower than, the March average. The four years averaged for the diagram are rather too short a period—not that the quinquennium is necessarily long enough—and they are, in fact, too much affected by the considerable rise in price that occurred in the second half of 1907, particularly in certain items, such as American chilled. It will not escape notice that the trend of the average line of the imported beef, instead of being practically horizontal as it should be, is somewhat tilted to the right, and this still applies, though to a more limited extent, to the quinquennial averages in the tables.

Coming now to the cattle and beef prices of 1908, it will be observed that they all started well above the level of the (four years') average. We had, in fact, already begun to feel some scarcity in 1907. The highest prices are, however, to be found in the summer, and the great rise may be said to have set in abruptly in April, after which prices were for a few months practically parallel to the normal. The enhanced level is due to the shortage of meat supplies from the United States. This will be easily seen from the curves, both live and dead meat from that source separating themselves much more from the average than British; moreover, the rise in American was rapid at first, whereas the British began more slowly, and rose more rapidly later (beef more than live cattle). It would seem that British beef waited a little to make quite sure that the American rise was not merely momentary.

The original cause of the scarcity was the short maize harvest of 1907 in the United States. The production of the year amounted to but 2,592,000,000 bushels as compared with 2,927,000,000 bushels in the previous year; moreover, the general quality was reported poor, only some 77·7 per cent. being officially classed as "merchantable," while the three previous years averaged about 87·5 per cent. This, of course, sent up the price: the farm value on December 1st, 1907, in the United States was 52 cents per bushel, as against the three preceding years' average of 42 cents. Cattle fattening was thus rendered almost prohibitive; and, as stated in Clay Robinson's (Chicago) Live Stock Report, whitefaces were slaughtered by thousands in the autumn. The beasts that should have been ripe in the spring of 1908 were consequently not forthcoming.

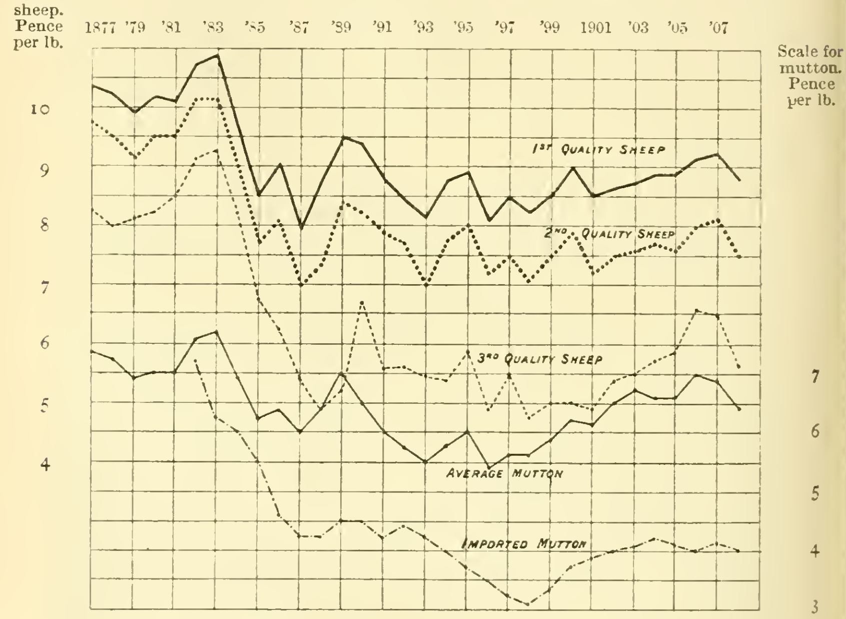
The very big rise in Argentine chilled beef (of which we actually received much more in 1908 than in any other year) is sympathetic; and it is curious to notice how, when prices of United States' produce weakened in July, Argentine fell away at once, only to obey the upward lead of North America in August.

Prices during the autumn were rather peculiar. Argentine beef ended the year at practically the same level as it began, and the United States' was but little higher than in January. British cattle absolutely maintained, and even slightly increased, the prices obtained in the summer, but a curious difference is to be noted as between English and Scotch beef. The latter, exactly like the cattle, maintained its position, but the English fell like American. It must be noted that in the illustrative diagrams I have only reproduced the prices of first quality, and the autumn has been noteworthy for an unusual absence of first quality cattle in the markets. Possibly this was due to the high prices having induced farmers to pay special attention to keeping anything good until Christmas, a policy which was attended with success. Hence scarcity of first quality may be a reasonable explanation of prices being maintained during the autumn, but I do not see why, if best cattle were scarce, best [English] beef was not also dearer. That inferior quality fell more than the best is indicated by the somewhat greater relative fall of cow and bull beef, particularly second quality. I have not been able to examine the prices of lower grades of British produce, which are, moreover, for various reasons, less satisfactory.

I may as well repeat here that prices of cattle and beef in 1908 have not been so high as in 1900 and 1902. It is curious that there was then a double maximum, with a year of more moderate prices sandwiched in between. I should not like to offer an opinion whether a similar phenomenon will occur upon this occasion.

Sheep and mutton. Unofficial records.—Taking first the serial diagram (15) of prices during the past thirty years, these show the same fall in 1883-87 as cattle and beef. The fall seems, however, to have been a good deal sharper, and the recovery in 1888-90 was was also upon a more important scale. Imports of mutton, at first on a very moderate scale, doubled between 1881 and 1884, and, quantitatively, grew more rapidly when prices were rising between 1887 and 1890 than in 1883-87, so that in this case also the anticipation of imports seems to have weighed upon the trade. It may be noted in this connection that the supplies were threatened (and subsequently arrived) from a much more distant source, namely,

DIAGRAM 15.—*Average prices of sheep and mutton*, 1877-1908.

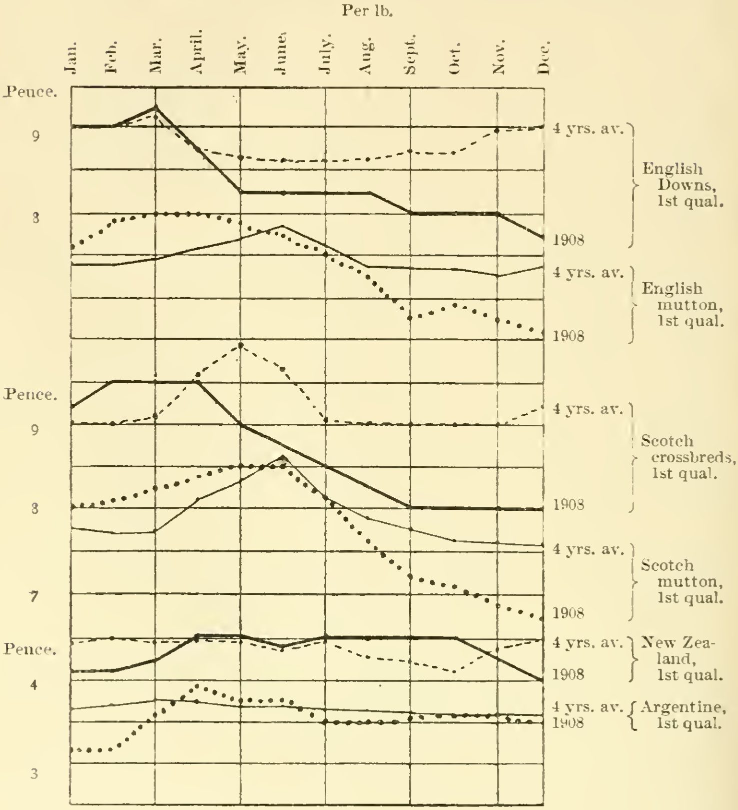


Argentina and Australasia, with immense actual and potential wealth of flocks, than in the case of beef, which was derived from the United States (the Argentine Republic being negligible in those days from the beef point of view). Imported mutton fell even more rapidly in value than other kinds, doubtless owing to the growing proportion of cheap Argentine or New Zealand now added to the fresh or live European, and about 1885 fell below the value of imported beef, a level which, with some fluctuations, was maintained for many years (until the last quinquennium), whereas British mutton is very rarely below beef.

After 1889-90 sheep and mutton values declined, the nadir being 1893-98. Third quality British continued to fall until 1898-1901; imported mutton touched its lowest in 1898. Since then there has been a steady rise (arrested in 1908) in all classes. First and second quality exhibit a curious rise in 1900, while third quality and dead mutton were practically unaffected. Of late years (except 1908) prices must be regarded as having been very satisfactory, the 1907 value being the highest since 1890. The years 1905-07 were probably affected by the high price of wool (it must be borne in mind that the sheep's skin with its wool is, relatively to the meat, a much more important item than the hide of the ox). Fluctuations in wool values may often be responsible for some of the apparent discrepancies in the price of live sheep.

Official Prices.—I have treated the official prices of sheep and mutton in the last quinquennium in exactly the same way as beef, and a very different picture is presented in Diagram 16. The June maximum appears only in the case of Scotch (alive and dead), and in English dead mutton. With English sheep, it will be observed that the minimum occurs in the early summer. This is because, during winter and early spring, sheep are sold unshorn; as summer arrives they are shorn before being marketed; and the allowance made for the wool disappears. The steadily increasing proportion of unshorn sheep in the total causes a drop in the average prices about June: this occurs later in the Scotch sheep, as seems only natural. The difference in the value of shorn and unshorn sheep may be as much as 1*d*. per lb., often less, but sometimes more in certain cases, depending chiefly upon the breed and price of wool. Hence we find that while there is a distinct June maximum in the case of dead mutton, English live sheep show a minimum at that period; with Scotch sheep the minimum is deferred till later and the June maximum is apparent. The changes in the New Zealand and Argentine frozen are so slight that I hesitate to draw any deductions, though they may possibly be significant to the expert in that trade.

Diagram 16.—*Monthly prices of sheep and mutton.*



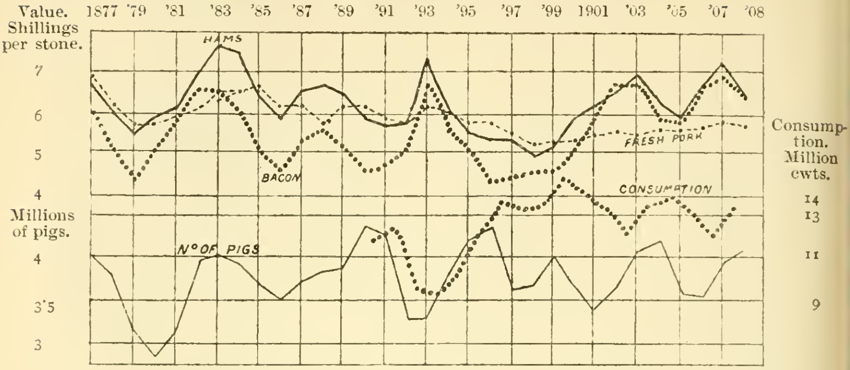
The summer of 1908 has witnessed a remarkable slump in the price of British mutton, a slump which has much puzzled all concerned. [Owing to this factor, the averages of 1904-07 shown in the diagram are probably more typical of the normal monthly movement in the case of sheep than the quinquennial average in the tables.] English mutton was at its maximum in March, and fell steadily during the early summer. Already by May live sheep were below the four-year average, but prices continued to fall till the end of the year; and went rather from bad to worse during the winter. $7\frac{3}{4}d.$ per lb. for first quality Downs, which was the official average in December, is far the lowest of the quinquennium.

Various reasons for these low prices have been advanced in the press, but I do not think that what I apprehend to be the real cause has been mentioned, viz., the relatively large flocks of sheep in Great Britain. The Agricultural Returns of 1908 show an increase of over 2,000,000 sheep in the United Kingdom since 1906, and this means, sooner or later, an extra 1,000,000 cwts. of dead mutton available for consumption. Imports of mutton, although less in 1908 than in 1907, are still much above those of 1906 [the *autumn* imports of 1908 are above those of 1907, mainly from Argentina; the increase from Holland, as to which much has been said, was quite unimportant]. With wool prices lower than in 1906 and 1907, the impetus given to sheep breeding by that incentive is no longer acting, and it is clear that the stock of sheep in the country is as heavy as can possibly be carried, even at the good mutton prices hitherto prevailing. Feeding the increased number of sheep has, of course, gone on *pari passu* with the production of wool, and the extra animals are now ripe. If not actually marketed, our large stock is a dead weight hampering the sales. My tables show an estimated quantity of 10,088,000 cwts. of mutton consumed in 1907-08; *if* the number of sheep on 4th June next prove the same as last June, and *if* our imports in the meat year 1908-09 be taken as only equal to those of the calendar year (they look like exceeding them), such data would imply a consumption in 1908-09 of 10,800,000 cwts. of mutton. This is an addition of 7 per cent. waiting to be consumed somehow before the trade can be regarded as being on a normal basis again. Or, in other words, if our consumption is to be the same in 1908-09 as in 1907-08, we must either import 700,000 cwts. less in the current meat year, or hold over some 1,250,000 sheep more. I doubt our next census showing that increase in our sheep; farmers want to reduce their flocks at present, not augment them! Under these conditions, with such an incubus hovering over the market, low prices seem to me inevitable.

As further evidence of this, note that British sheep fell in price before mutton, and that imported Argentine and New Zealand did not fall at all till quite the end of the year (when imports were relatively heavy). Evidently only the *British* supply exceeded the demand. Farmers are, in fact, now losing something of the fortunate profits that they made a couple of years or so ago on the wool.

Pigs and pig-meat.—Of this item I have no very good series of figures extending over a long period. The import values suggest themselves, and I have accordingly taken, and exhibited in the accompanying diagram (17), the average values of fresh pork, bacon, and ham imported since 1877. The values of live swine imported (there have been none in recent years) are hardly satisfactory owing to the smallness of the quantities involved.

DIAGRAM 17.—*Import values of pig-meat*, 1877-1908.



Prices of pig-meat differ from beef and mutton in several ways. In the first place, their general level has been much more stationary throughout the whole period. These commodities, being salted, may perhaps be regarded as indifferent to the development of the refrigerating industry; and a comparison of their nearly dead level of values with the sharp drop in beef and mutton shows clearly that the trade in pig-meat was on a world-basis before 1877.

The most interesting point in connection with the bacon and hams is the clearly-marked interdependence of supply and demand (the value of the pork hardly varies from year to year). The pig-breeding industry, being one in which a large amount of the produce can be brought to maturity in a few months, responds in a very sensitive manner to the price (and *vice versâ*). When this goes up, farmers breed more extensively, and the pig population rises rapidly: the demand is soon met and surpassed, and prices fall again as quickly as they rose. On Diagram 17 I have also plotted the total number of pigs in the United Kingdom in each year, and, for recent years, have added the estimated consumption of pig-meat. The latter curve reflects the prices very well, much more so than the mere pig-population, which is the primary cause of the oscillations in our total pig-meat supply. There is, however, visible a very distinct tendency for the price oscillations to be one to two years behind those of the population during the past twenty years, although it is not apparent in the first decade.

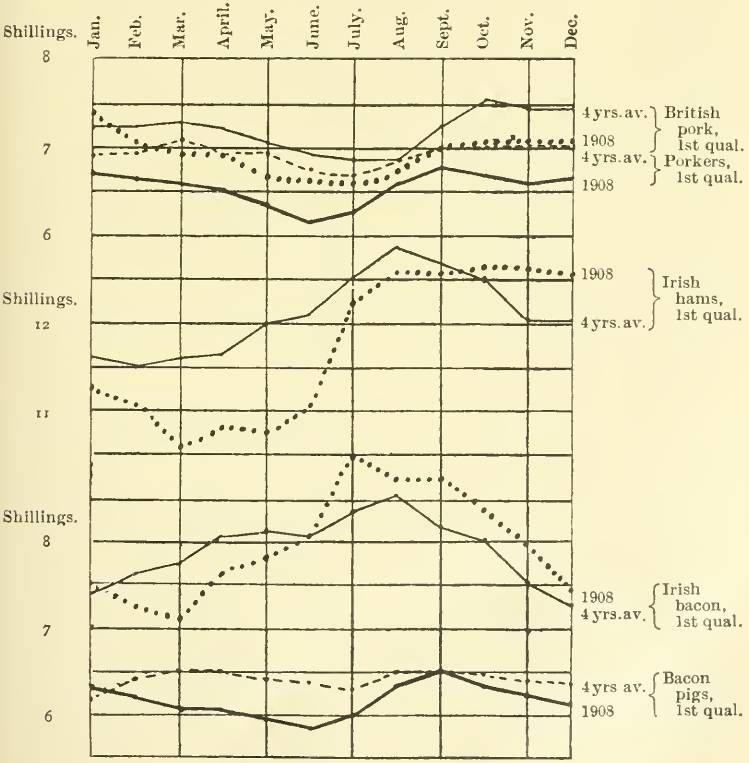
Another point that may be noticed is the near approach of the value of imported bacon to hams in recent years, whereas until 1890 the former was consistently some 5*s.* to 10*s.* per cwt. below the latter. This is no doubt due to the larger proportion of the higher-priced Danish among our bacon imports of late years.

It is often said that we might well increase our pig population, in the same way as is being so well done by our Continental neighbours; and I think the suggestion reasonable. On the other hand, there seems some good reason for our present relative inaction, since Diagram 17 shows very clearly that pig breeders are only too willing to increase their business the moment the industry becomes profitable. It would almost appear that the secret of profitable pig-breeding is known to comparatively few in this country.

Official prices.—Pigs show a decline in value during the early summer, followed by a rise later on, the maximum being attained about September or October. Porkers tend to be somewhat later than bacon pigs, and pork (the dead meat) appears to be most in favour during the winter. Bacon and hams differ, exhibiting a very marked maximum in July to September. I do not know how far it is safe to attribute this to a demand for cold ham as a staple dish instead of a hot joint during warm weather, nor whether we may attribute some portion of the rise to picnics.

DIAGRAM 18.—*Monthly prices of pigs and pig-meat.*

Per 14-lb. stone.



Conclusion.

The foregoing analysis indicates that the future sources of our over-sea meat supplies are problematical. The rough indications which may be deduced from such knowledge as we have of the live stock now existing in different parts of the world, and from the trade statistics of the past thirty years, are that the surplus available from North America has now about reached its maximum, and will before very many years have passed tend downwards, its place being taken by the Southern Hemisphere. From Europe we are still deriving steadily increasing quantities of pig-meat, and this will quite probably continue to increase for some years yet. The Southern Hemisphere, again, may be divided into two parts—South America, which is forging ahead fast, and Australasia, which is very possibly, so far as regards the average number of stock, nearly stationary (but fluctuating between enormously wide limits).

In saying that North America has about reached its maximum, I do not wish to imply that no increase may be looked for in the *near* future; on the contrary, I anticipate that the present good prices will give a stimulus to the cattle (and possibly pig) industry in the United States, and that in two or three years' time (perhaps less) we shall have a plentiful supply of meat thence, following, in fact, the next large maize harvest. But after that there should be a general tendency to decline, probably with considerable ups and downs. The rapid increase in population must, at some not very remote period, require more and more of the surplus for its own needs. Canada should, of course, greatly develop her herds upon her vast north-western prairies, and we should for some time draw increasing quantities thence, and less from the United States. Later on the States will themselves make demands upon Canada, and our colony's meat will probably go to whichever (Britain or the States) pays best.

Turning to the untapped sources of supply, comprising the, as yet, undeveloped areas of Canada, Argentina, Russian Asia, South Africa, &c., as well as completely new territories such as the highlands of equatorial Africa (the latter probably unavailable until the deadliness of various diseases has been mitigated), there is no doubt ample space to rear stock for many years to come. Russian Asia in particular has room for an enormous development of its live stock, but the produce may be absorbed by the needs of its own prolific population, or its surplus may be intercepted by Germany (the growing dependence of Central Europe upon imported food is an important factor in the problem of *our* supply, but I have no space to develop it).

I have frequently observed that, when a famine is alleged to be threatened in some important foodstuff, these various areas are allotted to its prevention. Now we are threatened at some rather indefinite period in the future—shall I say a generation hence ?—with a wheat famine *and* a meat famine, not to mention a timber famine, &c. To my mind there is little doubt that the areas now actually under cultivation or pasture are carrying much nearer their maximum of wheat than of meat. But wheat is the first necessity: of the two, meat is at present regarded as the more luxurious article of food. And I therefore think that, in the scramble for land between wheat and meat, it is the former that will secure the lion's share; and that, as a consequence, a scarcity of meat is to be apprehended before wheat.

Of course, there is also to be considered the suitability of the lands for the purpose; and here we must distinguish between the kinds of meat. Taking the world over, sheep are pastured; and when grazing lands are transformed into arable, mutton disappears, and is disappearing fast everywhere (except in Australia). Cattle are naturally pastured as far as possible; but when cattle-grazing lands are transformed into arable the cattle are still raised on the arable land, though of course not so cheaply. With absolutely virgin land, rich in fertilising constituents, like the Argentine plains, wheat will be raised year after year without manure; but later on, with the exhaustion of the soil, manuring and rotations become necessary. At this latter stage, cattle come in again, and thus we get corn and cattle developing together as in the United States. They are developing side by side in Argentina, where the areas are so vast that the two need not at present be interdependent, as lucerne can be grown for cattle-feeding on the same land for years in the same way as wheat. Swine tend to be a later industry and—at least frequently—to be concomitant with cattle, especially dairying. Hence I should not be surprised to see South America develop its pig-meat trade in the not distant future.

Mutton, therefore, tends to be driven out by corn, and subsequently by beef and pig-meat. The most advanced stage of this process is to be seen in Europe; it is in a much earlier stage on the American Continent. For our mutton in future I look to Australasia, and I do not see why we should not have some from our African possessions, but the bulk will probably come from the Antipodes. Not that I anticipate an extraordinary addition to the numbers; but such a very small amount of meat is yielded by the sheep in Australia as to leave room for enormous development of the production of existing flocks if the trade becomes sufficiently remunerative to allow of its being organised so as to yield every possible ounce of mutton. The average consumption of mutton in Australia is put at nearly 100 lbs. per head[25] (and possibly a lot of that is thrown away), or a total of, say, 420,000,000 lbs., and the country exports, say, 100,000,000 lbs., the two together making a total of a little over 500,000,000 lbs. With a sheep stock of only 85,000,000 this is but 6 lbs. in the year per sheep recorded as alive at the enumerations, whereas in the United Kingdom we found a sheep yield some 22½ lbs. per annum. Increased areas are also available in Australia, but their effect may possibly be rendered nugatory by the droughts, which are quite conceivably periodic.[26] If so, with our increasing dependence upon Australia, the future should reveal some heavy fluctuations in supplies and prices of mutton (and wool).

To sum up, I expect to see beef plentiful again in two or three years' time. In the future our dependence on North America will steadily diminish, and I look to the Southern Hemisphere for our extraneous meat supply: mainly to South America for our beef and to Australasia for our mutton, the latter probably exhibiting great fluctuations. Pig-meat should come for a good many years from Europe and perhaps Canada. But when the South American supply has ceased to grow, there seems every probability that population will increase faster than live stock, and the next generation will have to pay dear for its meat unless some radical change is made either in the method of producing meat or in the diet of the United Kingdom.

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[25] R. H. Rew, *Journal*, 1904, p. 425.

[26] See Col. H. E. Rawson, *Journal*, *Royal Meteorological Society*, 1908, p. 165.

APPENDIX.

TABLE I.—*Number of live stock in the meat trade world at different dates.*

[In millions, to one place of decimals.]

Country.	Cattle.				Sheep.			
	About 1880.	*About* 1890.	*About* 1900.	*About* 1907-08.	*About* 1880.	*About* 1890.	*About* 1900.	*About* 1907-08.
United Kingdom	9·8	10·7	11·4	11·7	30·2	31·6	31·0	31·3
France	11·4	13·6	14·5	14·0	22·5	21·7	20·2	17·5
Algeria	1·2	1·2	1·1	1·1	*8·0*	8·9	8·0	8·8
Belgium	1·4	1·4	1·6	1·8	0·4	0·2	0·2	*0·1*
Luxemburg	0·1	0·1	0·1	0·1	0·0	0·0	0·0	0·0
Holland	1·5	1·5	1·7	1·8	0·8	0·8	0·8	0·5
Denmark	1·5	1·6	1·8	*2·0*	1·5	1·2	1·0	0·7
Norway	1·0	1·0	1·0	1·0	1·6	1·4	1·0	0·9
Sweden	2·2	2·4	2·6	2·6	1·5	1·4	1·3	1·0
Russia in Europe	30·0	30·6	39·4	36·6	60·0*	58·0*	61·2*	46·6*
Finland	1·1	*1·2*	1·4	1·5	1·0	*1·0*	1·0	0·9
Asiatic Russia	*2·5*	*3·0*	4·2	5·7	*8·5**	*9·0**	9·4*	11·9*
Germany	15·6	17·5	18·9	20·6	19·2	13·6	9·7	7·7
Austria	8·6	8·6	9·5	*10·0*	3·8	3·2	2·6	*2·3*
Hungary	5·3	5·8	*7·0*	*7·5*	9·8	10·0	8·7	*7·0*
Roumania	2·3	2·5	2·6	*2·6*	4·5	5·0	5·7	*6·0*
Bulgaria	*1·6*	*1·7*	2·0	*2·2*	*6·7*	6·8	7·0	*7·0*
Servia	0·8	0·8	1·0	0·9	*3·0*	3·0	3·1	3·1
Switzerland	1·2	1·2	1·3	1·5	0·4	0·3	0·2	0·2
Italy	4·7	5·0	5·5	6·2	8·6	6·9	*8·0*	11·2
Spain	2·5	2·2	2·3	2·4	18·0	13·4	13·5	13·7
Portugal	*0·6*	*0·6*	*0·7*	*0·7*	*3·0*	*3·0*	*3·0*	*3·0*
Total Europe	106·9	114·3	131·7	134·5	213·0	200·5	196·7	181·4
British North America	*3·6*	4·1	5·6	7·7	*2·7*	2·6	2·5	2·8
United States	*46·0*	*66·2*	67·8	71·3	*58·6*	*56·7*	61·6	54·6
Mexico	*5·0*	*5·0*	5·1	*5·2*	*3·0*	*3·0*	3·4	*3·5*
Total North America	54·6	75·3	78·5	84·2	64·3	62·3	67·5	60·9
Queensland	3·2	5·6	4·1	3·9	6·9	14·5	10·3	16·7
New South Wales	2·6	1·9	2·0	2·7	35·4	56·0	40·0	44·5
Victoria	1·3	1·8	1·6	1·8	10·4	12·7	10·8	14·1
Tasmania	0·1	0·2	0·2	0·2	1·8	1·6	1·7	1·7
South Australia	0·3	0·4	0·2	0·3	6·5	7·0	5·2	6·8
West Australia	0·1	0·1	0·3	0·8	1·2	2·5	2·4	3·7
Australia, total	7·6	10·0	8·4	9·7	62·2	94·3	70·4	87·5
New Zealand	0·7	0·8	1·3	1·8	13·0	16·2	19·3	22·4
Cape Colony	*1·4*	1·5	1·1	2·0	*12·5*	16·7	12·0	15·0
Natal	0·5	0·7	0·4	0·8	0·4	0·9	0·6	0·8
Uruguay	*5·5*	5·5	6·8	*6·5*	*15·0*	*17·0*	17·2	*14·0*
Argentina	*14·0*	22·0	23·0	29·1	*70·0*	71·0	76·0	67·2
Chile	*0·8*	*0·8*	*0·8*	*0·8*	*1·3*	*1·3*	*1·3*	*1·3*
Falkland Islands	0·0	0·0	0·0	0·0	0·4	0·7	0·8	0·7
Total Southern Hemisphere	30·5	41·3	41·8	50·7	174·8	218·1	197·6	208·9
Grand Total	192·0	230·9	252·0	269·4	452·1	480·9	461·9	451·2

* Including goats.

TABLE I—*Contd.* *Number of live stock in the meat trade world at different dates.*

Country.	**Pigs.**				**Total** *Equivalent of Cattle (see p. 315).*				**Population** *in Millions.*	
	About 1880.	*About* 1890.	*About* 1900.	*About* 1907-8.	*About* 1880.	*About* 1890.	*About* 1900.	*About* 1907-8.	*About* 1880.	*About* 1907-8.
United Kingdom	2·9	4·4	3·7	4·1	18·6	21·5	21·4	22·2	35·0	43·9
France	5·6	6·0	6·7	7·1	22·3	24·8	26·4	25·9	37·3	39·3
Algeria	0·1	0·1	0·1	0·1	2·7	2·8	2·6	2·7	3·3	5·2
Belgium	0·6	0·9	1·0	1·2	2·2	2·6	2·9	3·3	5·5	7·2
Luxemburg	0·1	0·1	0·1	0·1	0·2	0·2	0·2	0·2	0·2	0·2
Holland	0·3	0·6	0·7	*0·9*	2·0	2·4	2·7	3·0	4·0	5·8
Denmark	0·5	0·8	1·3	*1·7*	2·4	2·8	3·6	4·2	2·0	2·6
Norway	0·1	0·1	0·2	0·2	1·4	1·4	1·4	1·4	1·9	2·3
Sweden	0·4	0·6	0·8	0·9	3·0	3·4	3·8	3·9	4·6	5·4
Russia in Europe	11·0	11·0	13·2	11·4	54·1	54·3	66·4	58·9	83·5	118·4
Finland	0·2	0·2	0·2	0·2	1·5	1·6	1·8	1·9	2·1	2·9
Asiatic Russia	*0·4*	*0·5*	0·7	0·9	4·5	5·2	6·7	8·9	*14·0*	28·3
Germany	9·0	11·5	16·8	22·1	30·2	34·2	41·6	49·5	45·2	62·0
Austria	2·7	3·5	4·7	*5·4*	12·6	13·5	15·8	17·1	22·1	28·2
Hungary	4·2	6·1	*8·0*	*9·0*	12·2	15·1	18·5	20·0	15·6	20·5
Roumania	0·8	0·9	1·7	*2·0*	4·1	4·5	5·7	6·1	4·8	6·8
Bulgaria	0·5	0·5	0·4	0·4	3·4	3·5	3·7	3·9	2·0	4·2
Servia	*0·9*	0·9	1·0	0·9	2·4	2·4	2·8	2·6	1·7	2·8
Switzerland	0·4	0·5	0·6	0·6	1·8	1·9	2·1	2·3	2·8	3·5
Italy	2·0	1·8	2·2	2·5	8·7	8·4	9·6	11·2	28·5	33·9
Spain	*2·0*	1·9	*2·0*	2·0	8·1	6·9	7·1	7·4	16·6	19·2
Portugal	*0·9*	*1·0*	*1·0*	*1·0*	2·2	2·4	2·5	2·5	4·1	5·2
Total Europe	45·6	53·8	67·1	74·6	200·6	215·8	249·3	259·1	336·8	447·8
British North America	*1·3*	1·7	2·4	3·4	5·7	6·7	9·0	12·4	4·5	6·0
United States	49·8	57·4	62·9	56·1	118·3	147·7	157·0	150·8	50·2	86·3
Mexico	*0·5*	*0·5*	0·6	*0·6*	6·1	6·1	6·4	6·6	10·2	13·6
Total North America	51·6	59·6	65·9	60·1	130·1	160·5	172·4	169·6	64·9	105·9
Queensland	0·1	0·1	0·1	0·1	4·5	8·2	6·0	6·9	0·2	0·5
New South Wales	0·3	0·3	0·3	0·2	9·1	11·9	9·3	10·6	0·8	1·6
Victoria	0·2	0·3	0·3	0·2	3·3	4·4	3·8	4·5	0·9	1·2
Tasmania	0·0	0·1	0·1	0·0	0·4	0·6	0·6	0·5	0·1	0·2
South Australia	0·1	0·1	0·1	0·1	1·5	1·7	1·2	1·6	0·3	0·4
West Australia	0·0	0·0	0·1	0·1	0·3	0·5	0·8	1·6	0·0	0·3
Australia, total	0·7	0·9	1·0	0·7	19·1	27·3	21·7	25·7	2·3	4·2
New Zealand	0·2	0·3	0·2	0·2	3·2	4·0	4·9	5·9	0·5	0·9
Cape Colony	*0·1*	0·2	0·2	0·4	3·7	4·6	3·4	5·1	0·8	2·5
Natal	0·0	0·0	0·1	0·1	0·6	0·9	0·6	1·1	0·4	1·2
Uruguay	*0·0*	*0·0*	0·1	0·0	8·1	8·4	9·9	8·9	0·4	1·1
Argentina	*0·3*	0·4	0·9	1·4	26·4	34·7	37·2	42·4	2·5	5·7
Chile	*0·1*	*0·1*	0·1	0·1	1·1	1·1	1·1	1·1	2·5	3·4
Falkland Islands	0 0	0·0	0·0	0·0	0·1	0·1	0·1	0·1	0·0	0·0
Total Southern Hemisphere	1·4	1·9	2·6	2·9	62·3	81·1	78·9	90·3	9·4	19·0
Grand total	98·6	115·3	135·6	137·6	393·0	457·4	500·6	519·2	411·1	572·7

TABLE II.—*Estimated meat production of the United Kingdom.*

Years.	Beef.	Veal.	Total beef and veal.	Mutton.	Lamb.	Total mutton and lamb.	Pig-meat.	Total of all meat.
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
1890-91	10,029,640	618,720	10,648,360	4,793,120	737,400	5,530,520	6,470,800	22,649,680
'91-92	12,071,060	744,640	12,815,700	5,593,800	860,580	6,454,380	7,525,620	26,795,700
'92-93	14,059,640	867,320	14,926,960	6,121,120	941,720	7,062,840	4,779,720	26,769,520
'93-94	14,193,740	875,580	15,069,320	5,792,480	891,160	6,683,640	4,233,160	25,986,120
'94-95	12,287,460	758,000	13,045,460	5,103,280	785,120	5,888,400	5,080,060	24,013,920
'95-96	11,451,700	706,440	12,158,140	4,647,260	714,960	5,362,220	6,200,860	23,721,220
'96-97	12,027,960	741,980	12,769,940	5,314,180	817,560	6,131,740	6,841,320	25,743,000
'97-98	11,770,500	726,100	12,496,600	5,028,660	773,640	5,802,300	5,300,760	23,599,660
'98-99	11,725,080	723,300	12,448,380	5,190,120	798,480	5,988,600	5,267,760	23,704,740
'99-1900	12,392,060	764,440	13,156,500	5,726,780	881,040	6,607,820	6,298,340	26,062,660
1900-01	12,607,400	777,720	13,385,120	5,406,660	831,800	6,238,460	5,577,400	25,200,980
'01-02	13,133,780	810,200	13,943,980	5,565,940	856,300	6,422,240	4,808,620	25,174,840
'02-03	12,538,320	773,460	13,311,780	5,308,500	816,700	6,125,200	5,011,100	24,448,080
'03-04	12,030,320	742,140	12,772,460	5,363,240	825,120	6,188,360	5,943,600	24,904,420
'04-05	12,615,160	778,200	13,393,360	5,146,860	791,820	5,938,680	6,501,160	25,833,200
'05-06	12,991,560	801,420	13,792,980	5,122,680	788,100	5,910,780	5,166,960	24,870,720
'06-07	13,460,160	830,340	14,290,500	4,937,320	759,580	5,696,900	4,847,860	24,835,260
'07-08	13,079,500	804,860	13,886,360	4,884,160	751,400	5,635,560	5,791,100	25,313,620

TABLE III.—*Total imports of (live and dead) meat into the United Kingdom.*

[*In thousands of cwts.*]

Year.	Beef.				Mutton.			
	From North America.	*From* Southern Hemisphere.	*From* Europe, &c.	*From* World.	*From* North America.	*From* Southern Hemisphere.	*From* Europe, &c.	*From* World.
1877....	803	—	823	1,626	13	—	505	518
'78....	1,329	—	652	2,081	48	—	479	527
'79....	1,519	—	599	2,118	108	—	450	558
1880....	2,451	2	793	3,246	83	—	475	558
'81....	2,077	3	748	2,828	66	—	487	553
'82....	1,223	2	1,236	2,461	103	37	713	853
'83....	2,512	3	1,221	3,736	146	108	637	891
'84...	2,446	5	975	3,426	85	353	622	1,060
'85....	2,532	19	694	3,245	64	450	506	1,020
'86....	2,215	28	572	2,815	66	575	638	1,279
'87....	1,964	8	545	2,517	25	689	655	1,369
'88....	2,437	45	730	3,212	36	888	642	1,566
'89....	4,204	109	686	4,999	46	1,005	576	1,627
1890....	6,014	191	495	6,700	36	1,416	496	1,948
'91....	5,335	342	271	5,948	39	1,573	325	1,937
'92...	6,055	341	38	6,434	14	1,521	280	1,815
'93....	4,302	390	68	4,760	5	1,796	291	2,092
'94....	5,477	439	28	5,944	216	2,175	292	2,683
'95....	4,698	942	35	5,675	382	2,760	273	3,415
'96....	5,962	1,107	12	7,081	196	2,973	284	3,453
'97....	6,268	1,345	57	7,670	145	3,214	282	3,641
'98...	5,886	1,396	56	7,338	108	3,407	297	3,812
'99...	5,985	1,580	77	7,642	111	3,458	313	3,882
1900....	6,401	1,580	101	8,082	109	3,211	354	3,674
'01....	6,983	1,342	90	8,415	217	3,334	332	3,883
'02...	5,581	1,385	204	7,170	200	3,344	361	3,905
'03...	6,359	1,690	114	8,163	193	3,783	285	4,261
'04....	6,425	2,108	84	8,617	215	3,240	285	3,740
'05....	6,408	2,948	92	9,448	110	3,570	261	3,941
'06....	6,418	3,178	22	9,618	58	3,877	253	4,188
'07....	5,725	3,340	29	9,094	61	4,379	235	4,675
'08....	4,160	4,271	43	8,474	49	4,155	289	4,493

TABLE III—*Contd.* *Total imports of meat into United Kingdom.*

[*In thousands of cwts.*]

Year.	Pig-meat.				Total meat.			
	From North America.	*From* Southern Hemisphere.	*From* Europe, *&c.*	*From* World.	*From* North America.	*From* Southern Hemisphere.	*From* Europe, *&c.*	*From* World.
1877	2,787	—	357	3,144	3,905	191	1,792	5,888
'78	4,322	—	419	4,741	6,054	113	1,768	7,935
'79	4,957	—	454	5,411	7,097	102	1,609	8,808
1880	5,357	—	438	5,795	8,423	161	1,820	10,404
'81	4,663	—	370	5,033	7,224	200	1,744	9,168
'82	2,803	—	408	3,211	4,476	235	2,386	7,097
'83	3,463	—	649	4,112	6,564	362	2,460	9,386
'84	2,931	—	851	3,782	5,737	514	2,488	8,739
'85	3,762	—	697	4,459	6,633	700	1,946	9,279
'86	3,945	—	659	4,604	6,534	706	1,931	9,171
'87	3,507	—	868	4,375	5,800	900	2,124	8,824
'88	2,834	—	1,274	4,108	5,640	1,122	2,723	9,485
'89	3,927	—	969	4,896	8,663	1,250	2,333	12,246
1890	4,635	—	569	5,304	10,763	1,643	1,755	14,161
'91	4,204	—	866	5,070	9,683	1,977	1,565	13,225
'92	4,555	1	943	5,499	10,724	1,939	1,398	14,061
'93	3,465	4	1,087	4,556	7,853	2,249	1,604	11,706
'94	4,103	3	1,115	5,225	9,902	2,700	1,590	14,192
'95	4,354	0	1,508	5,862	9,559	3,806	2,010	15,375
'96	4,828	1	1,735	6,564	11,132	4,182	2,240	17,554
'97	5,825	1	1,490	7,316	12,407	4,678	2,104	19,189
'98	7,072	1	1,445	8,518	13,270	4,887	2,101	20,258
'99	6,982	1	1,754	8,737	13,318	5,137	2,470	20,925
1900	6,672	2	1,714	8,388	13,464	4,917	2,517	20,898
'01	7,007	4	1,661	8,672	14,518	4,831	2,470	21,819
'02	5,591	0	1,842	7,433	11,699	4,880	2,831	19,410
'03	4,934	1	2,307	7,242	11,810	5,669	3,096	20,575
'04	5,089	0	2,462	7,551	11,989	5,555	3,215	20,759
'05	5,485	7	2,037	7,529	12,309	6,739	2,745	21,793
'06	5,471	24	2,049	7,544	12,230	7,292	2,622	22,144
'07	4,789	7	2,524	7,320	10,843	7,944	3,083	21,870
'08	4,996	2	2,756	7,754	9,464	8,721	3,436	21,621

TABLE IV.—*Imports from different countries.*

[*In thousands of cwts.*]

Year.	(*a.*) *From* **United States.**				(*b.*) *From* **British North America.**			
	Beef.	Mutton.	Pig-meat.	Total, *including unenumerated.*	Beef.	Mutton.	Pig-meat.	Total, *including unenumerated.*
1877....	731	7	2,749	3,775	72	6	38	128
'78....	1,194	24	4,304	5,871	135	24	18	183
'79....	1,348	63	4,894	6,811	171	45	63	286
1880....	2,138	36	5,281	7,980	313	47	76	443
'81....	1,731	26	4,553	6,721	346	40	110	503
'82 ...	1,013	61	2,768	4,162	210	42	35	314
'83....	2,131	89	3,253	5,784	381	57	210	780
'84 ...	2,025	48	2,682	5,017	421	37	249	720
'85....	2,069	39	3,472	5,843	463	25	290	790
'86....	1,769	9	3,644	5,716	446	57	301	818
'87....	1,530	3	3,215	4,980	434	22	292	820
'88....	2,033	8	2,673	4,981	404	28	161	659
'89....	3,651	12	3,622	7,710	553	34	305	953
1890....	5,187	7	4,234	9,499	827	29	401	1,264
'91....	4,626	18	3.966	8,705	709	21	238	978
'92....	5,415	1	4,198	9,710	640	13	357	1,014
'93....	3,760	2	3,211	7,049	542	3	254	804
'94 ..	4,944	133	3,790	8,971	533	83	313	931
'95....	4,068	251	3,989	8,428	630	131	365	1,131
'96....	5,278	146	4,185	9,743	684	50	643	1,389
'97....	5,451	105	5,399	11,114	817	40	426	1,293
'98....	5,176	80	6,391	11,840	710	28	681	1,430
'99....	5,296	70	6,354	11,949	689	41	628	1,369
1900....	5,693	83	5,925	11,971	708	26	747	1,493
'01....	6,397	173	6,462	13,330	586	44	545	1,188
'02....	4,970	165	4,954	10,404	611	35	637	1,295
'03....	5,149	140	4,057	9,646	1,210	53	877	2,164
'04....	5,487	165	4,045	9,935	938	50	1,044	2,054
'05....	5,445	90	3,986	9,795	963	20	1,499	2,514
'06....	5,397	49	4,011	9,716	1,021	9	1,460	2,514
'07....	4,890	52	3,256	8,443	835	9	1,533	2,400
'08....	3,361	42	3,645	7,283	799	7	1,351	2,181

TABLE IV—*Contd.* *Imports from different countries.*

[*In thousands of cwts.*]

Year.	(*c.*) *From* **Argentina.**				(*d.*) *From* **Uruguay.**			
	Beef.	Mutton.	Pig-meat.	Total *including unenumerated.*	Beef.	Mutton.	Pig-meat.	Total *including unenumerated.*
1877....	—	—	—	0	—	—	—	11
'78....	—	—	—	5	—	—	—	6
'79....	—	—	—	4	—	—	—	3
1880....	—	—	—	3	—	—	—	14
'81....	—	—	—	15	—	—	—	16
'82....	—	0	—	16	—	—	—	18
'83....	—	4	—	13	—	—	—	17
'84....	1	40	—	45	0	8	0	32
'85....	1	112	0	125	—	0	—	21
'86....	7	190	0	220	0	—	—	22
'87....	0	251	0	265	—	—	—	20
'88....	4	345	0	359	—	—	—	48
'89....	9	395	0	415	—	—	—	57
1890....	17	448	0	472	32	—	0	40
'91....	122	463	0	605	35	—	—	42
'92....	130	483	1	640	30	—	0	38
'93....	78	531	4	633	19	—	—	27
'94....	58	630	1	707	2	—	—	12
'95....	255	896	0	1,173	10	0	0	21
'96....	437	1,001	1	1,465	4	3	0	14
'97....	529	1,113	1	1,666	2	2	—	15
'98....	658	1,358	1	2,042	9	—	—	18
'99 ...	692	1,364	1	2,084	5	2	—	16
1900....	688	1,220	1	1,958	12	1	—	23
'01....	805	1,273	0	2,152	8	—	0	18
'02....	973	1,353	0	2,413	47	—	—	58
'03....	1,406	1,539	1	3,045	34	—	—	44
'04....	1,779	1,433	0	3,328	10	0	—	25
'05....	2,676	1,464	0	4,285	48	54	—	117
'06....	2,838	1,434	1	4,431	20	23	—	60
'07....	2,729	1,411	0	4,308	68	49	—	135
'08....	3,628	1,558	0	5,444	133	58	—	203

TABLE IV—*Contd.* *Imports from different countries.*

[*In thousands of cwts.*]

Year.	(*e.*) *From* **Australia.**				(*f.*) *From* **New Zealand.**			
	Beef.	Mutton.	Pig-meat.	Total, *including unenumerated.*	Beef.	Mutton.	Pig-meat.	Total, *including unenumerated.*
1877....	—	—	—	155	—	—	—	22
’78....	—	—	—	66	—	—	—	36
’79....	—	—	—	71	—	—	—	24
1880....	2	—	—	122	—	—	—	22
’81....	3	—	—	161	—	—	—	8
’82....	2	31	—	173	—	6	—	28
’83....	3	32	—	224	0	72	—	108
’84....	3	64	—	167	1	241	0	270
’85 ...	8	54	0	233	10	284	0	321
’86 ...	10	38	0	90	11	347	0	374
’87....	0	42	0	178	8	396	0	437
’88....	1	44	—	141	40	499	0	574
’89....	25	42	0	99	75	568	0	679
1890....	45	148	—	201	96	820	0	929
’91....	69	205	0	283	116	905	0	1,047
’92....	111	263	0	395	69	775	0	865
’93....	276	356	0	647	16	909	0	940
’94....	376	562	1	978	3	983	1	1,003
’95....	661	667	0	1,383	16	1,197	0	1,229
’96....	635	869	0	1,553	31	1,099	0	1,149
’97...	738	769	0	1,568	76	1,330	0	1,429
’98....	633	693	0	1,363	96	1,354	0	1,462
’99 ..	745	584	0	1,376	138	1,501	0	1,654
1900 ...	562	484	0	1,097	318	1,506	1	1,839
’01....	297	565	1	912	232	1,496	3	1,749
’02 ...	126	327	—	484	239	1,661	0	1,921
’03....	89	190	—	336	161	2,049	0	2,239
’04....	137	168	0	359	182	1,634	0	1,838
’05....	70	520	6	631	154	1,532	1	1,706
’06....	72	641	19	751	248	1,759	4	2,030
’07....	145	876	5	1,036	398	2,016	2	2,438
’08....	155	672	0	836	355	1,757	1	2,127

Table IV—*Contd.* *Imports from different countries.*

[*In thousands of cwts.*]

Year.	(*g.*) *From* **Germany.**				(*h.*) *From* **Belgium.**			
	Beef.	Mutton.	Pig-meat.	Total, *including unenumerated.*	Beef.	Mutton.	Pig-meat.	Total, *including unenumerated.*
1877....	174	277	262	716	2	36	7	55
'78....	164	259	308	735	—	22	17	44
'79....	125	218	345	691	—	12	27	46
1880 ...	133	218	365	719	—	6	10	23
'81....	131	258	300	699	—	16	9	33
'82....	165	276	311	757	—	61	12	85
'83....	156	286	476	922	—	53	19	78
'84....	128	291	607	1,034	—	24	30	67
'85....	93	196	477	771	—	22	30	67
'86....	42	199	368	612	—	1	26	42
'87....	51	186	395	635	—	6	32	51
'88....	74	176	273	526	—	2	43	62
'89....	1	184	72	261	—	58	15	98
1890....	1	121	1	132	11	79	15	117
'91....	2	32	5	46	14	50	31	112
'92....	—	—	—	—	5	43	24	84
'93....	2	17	12	32	6	39	27	86
'94....	1	7	2	13	6	29	31	78
'95 ...	6	7	2	19	7	30	29	77
'96....	1	4	10	18	7	0	40	53
'97....	1	2	12	20	13	0	39	60
'98....	3	1	13	23	11	1	37	60
'99....	4	1	17	26	10	—	37	60
1900 ..	6	1	26	41	14	2	53	84
'01....	9	2	18	33	15	0	48	88
'02....	8	1	14	28	28	4	45	94
'03....	6	1	12	25	39	4	43	99
'04 ...	6	0	13	24	60	1	35	114
'05....	3	0	9	16	72	9	40	141
'06....	3	—	8	14	16	4	14	45
'07....	5	—	6	13	19	1	20	49
'08....	6	1	4	13	21	13	23	72

TABLE IV—*Contd.* *Imports from different countries.*

[*In thousands of cwts.*]

Year	(*j.*) *From* **Holland.**				(*k.*) *From* **Denmark** (*including Iceland*).			
	Beef.	Mutton.	Pig-meat.	Total, *including unenumerated.*	Beef.	Mutton.	Pig-meat.	Total (*including unenumerated.*
1877....	124	166	33	406	248	24	41	314
'78....	74	157	34	357	262	37	49	348
'79....	52	186	22	346	196	32	53	283
1880....	66	191	11	355	313	54	48	415
'81....	63	158	12	338	293	50	42	386
'82....	141	304	18	465	415	67	51	537
'83....	65	219	62	372	568	72	84	724
'84....	67	244	44	362	446	54	161	661
'85....	67	249	56	386	315	45	118	479
'86....	44	345	93	511	327	69	162	560
'87....	73	378	159	642	275	56	250	583
'88....	120	400	270	831	319	54	643	1,020
'89....	96	202	129	472	403	88	672	1,173
1890....	49	191	27	325	297	80	511	894
'91....	47	187	134	431	109	37	632	783
'92....	2	169	103	376	9	25	738	880
'93....	0	197	147	458	56	20	790	881
'94....	0	200	160	470	0	41	832	887
'95....	0	167	265	585	7	41	1,095	1,157
'96....	1	229	268	663	2	42	1,314	1,375
'97....	5	267	245	744	34	11	1,095	1,160
'98 ..	2	266	241	760	37	20	1,091	1,167
'99....	17	285	365	923	45	26	1,306	1,407
1900...	8	331	425	1,034	69	17	1,190	1,319
'01...	4	316	401	1,009	61	14	1,142	1,267
'02....	41	344	574	1,054	119	10	1,341	1,557
'03....	16	258	562	1,106	52	17	1,621	1,770
'04....	7	266	474	1,015	7	12	1,870	1,959
'05....	7	235	324	822	7	11	1,600	1,672
'06 ...	3	235	359	822	0	9	1,597	1,644
'07....	3	221	449	889	1	6	1,982	2,037
'08....	4	267	418	938	10	6	2,253	2,332

TABLE V.—*Estimated meat supply of the United Kingdom.*

Years.	Beef and Veal.				Mutton and Lamb.			
	Home.	Foreign.	Total.	Per Cent. of Home to Total.	Home.	Foreign.	Total.	Per Cent. of Home to Total.
	Cwts.	Cwts.	Cwts.		Cwts.	Cwts.	Cwts.	
1890-91...	10,648,360	6,309,020	16,957,380	62·8	5,530,520	1,881,850	7,412,370	74·6
'91-92...	12,815,700	6,389,500	19,205,200	66·7	6,454,380	1,841,100	8,295,480	77·8
'92-93...	14,926,960	5,677,470	20,604,430	72·4	7,062,840	2,026,290	9,089,130	77·7
'93-94...	15,069,320	5,336.300	20.405,620	73·8	6.683,640	2,150,180	8,833,820	75·7
'94-95...	13,045,460	5,639,840	18,685,300	69·8	5,888,400	3,057,460	8,945,860	65·8
'95-96...	12,158,140	6,492,740	18,650,880	65·2	5,362,220	3,673,660	9,035,880	59·3
'96-97...	12,769,940	7,093,320	19.863,260	64·3	6,131,740	3,321.240	9,452,980	64·9
'97-98...	12,496.600	7,814,740	20,311,340	61·5	5,802,300	3,832,120	9,634,420	60·2
'98-99...	12,448,380	7,206,860	19,655,240	63·3	5,988,600	3,792,840	9,781,440	61·2
'99-1900	13,156,500	7,877,360	21,033,860	62·5	6,607,820	3,837,240	10,445,060	63·3
1900-01...	13,385,120	8,322,960	21,708,080	61·7	6,238,460	3,896,380	10,134,840	61·6
'01-02...	13,943,980	8,014,400	21,958,380	63·5	6,422,240	3,698,620	10,120,860	63·5
'02-03...	13,311,780	7,218,460	20,530,240	64·8	6,125,200	4,089,920	10,215,120	60·0
'03-04...	12,772.460	8,669,680	21,442,140	59·6	6,188,360	3,966,080	10,154,440	60·9
'04-05...	13,393,360	8,799,600	22,192,960	60·3	5,938,680	3,925,580	9,864,260	60·2
'05-06...	13,792,980	9,813,340	23,606,320	58·4	5,910,780	4,014,820	9,925,600	59·6
'06-07...	14,290,500	9,312,580	23,603,080	60·5	5,696,900	4,475,740	10,172,640	56·0
'07-08...	13,886,360	8,958,880	22,845,240	60·8	5,635,560	4,452,420	10,087,980	55·9

Years.	Pig-meat.				Total.			
	Home.	Foreign.	Total.	Per Cent. of Home to Total.	Home.	Foreign.*	Total.	Per Cent. of Home to Total.
	Cwts.	Cwts.	Cwts.		Cwts.	Cwts.	Cwts.	
1890-91...	6,470,800	5,345,360	11,816,160	54·8	22,649,680	13,015,270	35,664,950	63·5
'91-92...	7,525,620	4,985,900	12,511,520	60·1	26,795,700	12,926,820	39,722,520	67·5
'92-93...	4,779,720	4,921,240	9,700,960	49·3	26,769,520	12,340,100	39,109,620	68·4
'93-94...	4,233,160	5,015,860	9,249,020	45·8	25,986,120	12,455,860	38,441,980	67·6
'94-95...	5,080,060	5,506,180	10,586,240	48·0	24,013,920	14,182,160	38,196,080	62·9
'95-96...	6.200,860	5,942,760	12,143,620	51·1	23,721,220	16,074,040	39.795,260	59·6
'96-97...	6,841,320	6,988,880	13,830,200	49·5	25,743,000	17,269,480	43,012,480	59·9
'97-98...	5,300,760	7,959,540	13,260,300	40·0	23,599,660	19,629,000	43,228,660	54·6
'98-99...	5,267,760	8,576,060	13,843,820	38·1	23,704,740	19,397,420	43,102,160	55·0
'99-1900	6,298,340	8,523.120	14,821,460	42·5	26,062,660	20,266,320	46,328,980	56·3
1900-01...	5,577,400	8,490,940	14,068,340	39·6	25,200,980	20,935,840	46,136,820	54·6
'01-02...	4,808,620	8,444,100	13,252,720	36·3	25,174,840	20,488,100	45,662,940	55·1
'02-03...	5,011,100	7,005,140	12,016,240	41·7	24,448,080	18,745,360	43,193,440	56·6
'03-04...	5,943,600	7,365,380	13,308,980	44·7	24,904.420	20,594,520	45,498,940	54·7
'04-05 .	6,501,160	7,516.060	14,017,220	46·4	25,833,200	20,789,000	46,622,200	55·4
'05-06...	5,166,960	7,494,080	12,661,040	40·8	24,870,720	21,842,900	46,713.620	53·2
'06-07...	4,847,860	7,193,440	12,041,300	40·3	24,835,260	21,364,720	46,199.980	53·8
'07-08...	5,791,100	7,660,280	13,451,380	43·1	25,313,020	21,537,360	46,850,380	54·0

* Including "meat unenumerated" and less exports of dead meat (British and foreign).

TABLE VI.—*Annual prices of cattle and beef*, 1877-1908.

Year.	**Cattle** (British). Per 14-lb. stone (dead weight).			**Beef.** Per 14-lb. stone.				Imported fresh beef. Value per 14 lb.
	Inferior quality.	Second quality.	Prime quality.	London (Central Market).	Liverpool.	Glasgow.	Average of cols. 5—7.	
	s. d.	*s. d.*	*s. d.*	*s. d.* *s. d.*	*s. d.* *s. d.*	*s. d.* *s. d.*	*s. d.*	*s. d.*
1877....	7 10½	9 7½	10 4	4 11½ to 9 4	6 1½ to 8 4	7 7 to 8 9	7 6	6 10
'78....	7 10½	9 7½	10 6	5 1 „ 9 6	6 5 „ 8 11	7 2 „ 8 5½	7 7	6 7½
'79....	7 2	8 7	9 7½	4 6 „ 8 7	6 1½ „ 8 7	7 0 „ 8 2	7 2	6 8
1880....	7 10½	9 6	10 4	5 1 „ 9 0½	5 5 „ 7 10½	7 2 „ 8 4	7 2	6 6
'81....	7 9	8 11	9 7½	5 3 „ 8 5½	5 5 „ 7 10½	7 0 „ 8 2	7 0	6 7½
'82....	7 7	9 9	10 6	5 6½ „ 9 4	5 6½ „ 8 0	7 9 „ 9 0½	7 6½	6 11
'83....	7 7	9 9	10 8	5 10 „ 9 6	6 1½ „ 8 5½	7 7 „ 8 11	7 9	7 0
'84....	7 2	9 4	10 1	5 1 „ 8 11	5 1 „ 7 9	7 2 „ 8 7	7 1	6 9
'85....	6 10	8 4	9 2	4 6 „ 7 10½	4 4½ „ 7 9	6 5 „ 8 0	6 6	6 6
'86....	5 8	7 5	8 5½	3 11 „ 7 5	3 9½ „ 7 0	6 0 „ 7 3½	5 11	5 9
'87....	5 3	6 5	7 9	3 4 „ 6 7	3 11 „ 6 5	4 10 „ 6 3	5 3	5 7½
'88....	4 1	7 3½	8 7	3 9½ „ 7 5	4 3 „ 7 0	6 1½ „ 7 0	5 11	5 8½
'89....	4 1	7 9	8 5½	4 1 „ 7 5	4 3 „ 6 10	5 6½ „ 7 3½	5 11	5 5½
1890....	4 1	7 7	8 5½	3 11 „ 7 5	4 6 „ 7 0	5 5 „ 6 7	5 9½	5 3½
'91....	4 10	7 7	8 7	3 9½ „ 7 7	3 4 „ 6 8½	4 6 „ 6 8½	5 5	5 3
'92....	5 1	7 2	8 4	3 6 „ 7 3½	3 2½ „ 5 10	4 4½ „ 6 8½	5 2	5 4
'93....	4 11½	7 2	8 4	3 8 „ 7 5	3 6 „ 6 1½	4 4½ „ 6 8½	5 3	5 3½
'94....	4 3	6 10	7 10½	3 2½ „ 7 2	3 4 „ 6 0	4 1 „ 6 7	5 1	5 0
'95....	4 8	6 10	7 10½	3 4 „ 7 3½	4 11½ „ 6 5	4 10 „ 7 0	5 7½	4 10½
'96....	4 1	6 7	7 9	2 9 „ 6 10	3 9½ „ 5 10	4 1 „ 6 3	4 11	4 8½
'97....	4 3	6 10	7 10½	3 9½ „ 7 2	4 4½ „ 6 1½	4 4½ „ 6 8½	5 5	4 10
'98....	4 1	6 5	7 5	3 8 „ 6 10	3 11 „ 6 0	4 4½ „ 6 3	5 2	4 9
'99...	4 4½	6 10	8 0	3 11 „ 7 0	4 3 „ 6 7	4 8 „ 6 7	5 6	4 10
1900....	5 5	7 3½	8 5½	4 6 „ 7 3½	4 8 „ 7 0	5 6½ „ 6 10	5 11½	4 11
'01....	4 1	6 10	8 0	4 1 „ 7 0	4 8 „ 6 8½	5 5 „ 6 8½	5 9	4 11
'02...	5 1	7 7	8 7	4 11½ „ 8 0	4 10 „ 7 9	7 2 „ 9 2	6 11½	5 4
'03....	4 11½	7 2	8 2	4 1 „ 7 0	4 10 „ 7 0	6 3 „ 8 0	6 2	5 0½
'04....	4 10	6 3	8 0	3 11 „ 7 2	4 6 „ 6 8½	6 1½ „ 7 10½	6 0½	4 7½
'05...	4 11½	6 1½	8 0	3 9½ „ 7 0	4 3 „ 6 10	6 0 „ 8 2	6 0	4 5
'06....	4 10	6 1½	8 0	3 8 „ 6 10	4 4½ „ 6 7	5 6½ „ 8 0	5 10	4 5
'07....	4 10	6 3	8 2	3 11 „ 7 2	4 4½ „ 6 8½	6 1½ „ 8 5½	6 1½	4 6½
'08....	4 8	6 7	8 4	3 11 „ 7 7	4 4½ „ 7 2	6 1½ „ 8 9	6 4	4 7

TABLE VII.—*Annual prices of sheep and mutton*, 1877-1908.

Year.	**Sheep** (British). Per lb. (dead weight).			**Mutton.** Per lb.				Imported fresh mutton. Value per lb.
	Inferior quality.	Second quality.	Prime quality.	London (Central Market).	Liverpool.	Glasgow.	Average of Cols. 5—7.	
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
1877....	$8\frac{1}{4}$	$9\frac{3}{4}$	$10\frac{3}{8}$	$4\frac{5}{8}$ to $9\frac{1}{4}$	$7\frac{3}{8}$ to $9\frac{1}{2}$	$6\frac{1}{4}$ to $7\frac{5}{8}$	$7\frac{3}{8}$	—
'78....	8	$9\frac{1}{2}$	$10\frac{1}{4}$	$4\frac{3}{4}$,, $9\frac{1}{8}$	7 ,, $9\frac{1}{4}$	6 ,, $7\frac{3}{8}$	$7\frac{1}{4}$	—
'79....	$8\frac{1}{8}$	$9\frac{1}{8}$	$9\frac{7}{8}$	$4\frac{5}{8}$,, $8\frac{5}{8}$	$6\frac{3}{4}$,, $8\frac{7}{8}$	$5\frac{7}{8}$,, $6\frac{7}{8}$	$6\frac{7}{8}$	—
1880....	$8\frac{1}{4}$	$9\frac{1}{2}$	$10\frac{1}{4}$	$4\frac{7}{8}$,, $8\frac{3}{4}$	$6\frac{3}{4}$,, $8\frac{3}{4}$	$5\frac{5}{8}$,, 7	7	—
'81....	$8\frac{1}{2}$	$9\frac{1}{2}$	$10\frac{1}{8}$	5 ,, 9	$6\frac{1}{2}$,, $8\frac{3}{8}$	$6\frac{1}{8}$,, $7\frac{1}{4}$	7	—
'82....	$9\frac{1}{8}$	$10\frac{1}{8}$	$10\frac{3}{4}$	$5\frac{3}{8}$,, $9\frac{1}{2}$	$7\frac{1}{2}$,, $9\frac{3}{8}$	$6\frac{3}{8}$,, $7\frac{1}{2}$	$7\frac{5}{8}$	$7\frac{1}{8}$
'83....	$9\frac{1}{4}$	$10\frac{1}{8}$	$10\frac{7}{8}$	$5\frac{5}{8}$,, $9\frac{3}{4}$	$7\frac{3}{8}$,, $9\frac{3}{8}$	$6\frac{1}{2}$,, $7\frac{7}{8}$	$7\frac{3}{4}$	$6\frac{1}{4}$
'84....	$8\frac{1}{4}$	$8\frac{7}{8}$	$9\frac{5}{8}$	$4\frac{7}{8}$,, $8\frac{5}{8}$	$6\frac{1}{2}$,, 8	6 ,, $7\frac{1}{4}$	$6\frac{7}{8}$	6
'85....	$6\frac{3}{4}$	$7\frac{3}{4}$	$8\frac{1}{2}$	$4\frac{1}{4}$,, $7\frac{5}{8}$	$4\frac{5}{8}$,, $7\frac{3}{4}$	6 ,, $7\frac{1}{4}$	$6\frac{1}{4}$	$5\frac{1}{2}$
'86....	$6\frac{1}{4}$	$8\frac{1}{8}$	9	$4\frac{1}{8}$,, $8\frac{1}{8}$	5 ,, $7\frac{5}{8}$	$6\frac{1}{8}$,, $7\frac{1}{4}$	$6\frac{3}{8}$	$4\frac{5}{8}$
'87....	$5\frac{3}{8}$	7	$7\frac{7}{8}$	$3\frac{3}{8}$,, $7\frac{1}{8}$	$5\frac{7}{8}$,, $7\frac{1}{8}$	$5\frac{1}{4}$,, 7	6	$4\frac{1}{4}$
'88....	$4\frac{7}{8}$	$7\frac{3}{8}$	$8\frac{3}{4}$	$3\frac{5}{8}$,, $7\frac{3}{4}$	5 ,, $7\frac{3}{8}$	$6\frac{3}{4}$,, $7\frac{5}{8}$	$6\frac{3}{8}$	$4\frac{1}{4}$
'89....	$5\frac{1}{4}$	$8\frac{3}{8}$	$9\frac{1}{2}$	4 ,, $8\frac{3}{8}$	$6\frac{3}{8}$,, $8\frac{1}{4}$	$6\frac{3}{4}$,, 8	7	$4\frac{1}{2}$
1890 ...	$6\frac{3}{4}$	$8\frac{1}{4}$	$9\frac{3}{8}$	$3\frac{1}{2}$,, 8	$5\frac{3}{8}$,, $8\frac{1}{8}$	$6\frac{1}{2}$,, $7\frac{7}{8}$	$6\frac{1}{2}$	$4\frac{1}{2}$
'91....	$5\frac{5}{8}$	$7\frac{7}{8}$	$8\frac{3}{4}$	3 ,, $7\frac{3}{8}$	$5\frac{1}{4}$,, $7\frac{1}{4}$	$5\frac{1}{2}$,, $7\frac{1}{2}$	6	$4\frac{1}{4}$
'92....	$5\frac{5}{8}$	$7\frac{3}{8}$	$8\frac{3}{8}$	$3\frac{1}{8}$,, $7\frac{1}{8}$	$4\frac{1}{2}$,, 7	$5\frac{1}{8}$,, $7\frac{3}{8}$	$5\frac{3}{4}$	$4\frac{3}{8}$
'93....	$5\frac{1}{2}$	7	$8\frac{1}{8}$	3 ,, $6\frac{7}{8}$	$4\frac{1}{4}$,, $6\frac{7}{8}$	$4\frac{7}{8}$,, $7\frac{1}{8}$	$5\frac{1}{2}$	$4\frac{1}{4}$
'94....	$5\frac{3}{8}$	$7\frac{3}{4}$	$8\frac{3}{4}$	$2\frac{3}{4}$,, $7\frac{3}{8}$	$4\frac{1}{2}$,, $7\frac{1}{8}$	$5\frac{1}{4}$,, $7\frac{1}{4}$	$5\frac{3}{4}$	4
'95....	$5\frac{7}{8}$	8	$8\frac{7}{8}$	$2\frac{7}{8}$,, $7\frac{5}{8}$	$5\frac{1}{8}$,, $7\frac{1}{2}$	$5\frac{1}{4}$,, $7\frac{1}{2}$	6	$3\frac{3}{4}$
'96 ..	$4\frac{7}{8}$	$7\frac{1}{4}$	$8\frac{1}{8}$	$2\frac{3}{8}$,, 7	$4\frac{1}{2}$,, $7\frac{1}{8}$	$4\frac{7}{8}$,, $6\frac{3}{4}$	$5\frac{3}{8}$	$3\frac{1}{2}$
'97....	$5\frac{1}{2}$	$7\frac{1}{2}$	$8\frac{1}{2}$	$2\frac{1}{2}$,, $7\frac{1}{4}$	$4\frac{1}{2}$,, $7\frac{1}{2}$	$5\frac{1}{8}$,, 7	$5\frac{5}{8}$	$3\frac{1}{4}$
'98....	$4\frac{3}{4}$	$7\frac{1}{8}$	$8\frac{1}{4}$	$2\frac{3}{4}$,, $7\frac{1}{8}$	5 ,, 7	$4\frac{3}{4}$,, $6\frac{7}{8}$	$5\frac{5}{8}$	$3\frac{1}{8}$
'99....	5	$7\frac{1}{2}$	$8\frac{1}{2}$	3 ,, $7\frac{1}{4}$	$5\frac{1}{4}$,, $7\frac{3}{8}$	$5\frac{1}{2}$,, $6\frac{7}{8}$	$5\frac{7}{8}$	$3\frac{3}{8}$
1900....	5	$7\frac{7}{8}$	9	$3\frac{1}{4}$,, $7\frac{5}{8}$	$5\frac{3}{8}$,, $7\frac{7}{8}$	6 ,, $7\frac{3}{4}$	$6\frac{1}{4}$	$3\frac{5}{8}$
'01....	$4\frac{7}{8}$	$7\frac{1}{4}$	$8\frac{1}{2}$	3 ,, $7\frac{1}{4}$	$5\frac{3}{4}$,, $7\frac{3}{4}$	$5\frac{3}{4}$,, $7\frac{1}{4}$	$6\frac{1}{8}$	$3\frac{7}{8}$
'02....	$5\frac{3}{8}$	$7\frac{1}{2}$	$8\frac{5}{8}$	$3\frac{5}{8}$,, $7\frac{1}{8}$	5 ,, $7\frac{7}{8}$	$6\frac{5}{8}$,, $8\frac{7}{8}$	$6\frac{1}{2}$	4
'03....	$5\frac{1}{2}$	$7\frac{5}{8}$	$8\frac{3}{4}$	$3\frac{5}{8}$,, $7\frac{3}{4}$	$5\frac{3}{8}$,, $8\frac{1}{4}$	$6\frac{1}{4}$,, $9\frac{1}{8}$	$6\frac{3}{4}$	$4\frac{1}{8}$
'04....	$5\frac{3}{4}$	$7\frac{3}{4}$	$8\frac{7}{8}$	$3\frac{3}{4}$,, $7\frac{7}{8}$	$5\frac{1}{8}$,, $8\frac{1}{4}$	$5\frac{7}{8}$,, $9\frac{1}{8}$	$6\frac{5}{8}$	$4\frac{1}{4}$
'05....	$5\frac{7}{8}$	$7\frac{5}{8}$	$8\frac{7}{8}$	$3\frac{1}{4}$,, $7\frac{5}{8}$	$5\frac{3}{8}$,, $8\frac{1}{8}$	$5\frac{7}{8}$,, $9\frac{3}{8}$	$6\frac{5}{8}$	$4\frac{1}{8}$
'06....	$6\frac{5}{8}$	8	$9\frac{1}{8}$	$3\frac{1}{4}$,, $7\frac{7}{8}$	$5\frac{1}{2}$,, $8\frac{1}{2}$	$6\frac{5}{8}$,, $10\frac{5}{8}$	7	4
'07....	$6\frac{1}{2}$	$8\frac{1}{8}$	$9\frac{1}{4}$	$3\frac{3}{8}$,, $7\frac{3}{4}$	$5\frac{5}{8}$,, $8\frac{3}{8}$	6 ,, $10\frac{1}{8}$	$6\frac{7}{8}$	4
'08....	$5\frac{5}{8}$	$7\frac{1}{2}$	$8\frac{3}{4}$	$3\frac{1}{8}$,, $7\frac{5}{8}$	$4\frac{3}{4}$,, $8\frac{1}{4}$	$5\frac{1}{2}$,, $9\frac{3}{8}$	$6\frac{3}{8}$	4

TABLE VIII.—*Value of imported pig-meat.*

[Per 14 lbs.]

Year.	Fresh pork.	Bacon.	Hams.
	s. d.	*s. d.*	*s. d.*
1877....	6 10½	6 0	6 9
'78....	6 1½	4 10	6 0
'79....	5 7½	4 4	5 5½
1880....	5 9	5 0	5 10
'81....	5 10½	5 9	6 1½
82....	6 1	6 7½	6 11
'83....	6 7	6 7½	7 7
'84....	6 6	6 1½	7 4½
'85....	6 7	5 1	6 4½
'86....	6 2	4 8½	5 11
'87....	6 2	5 3	6 6
'88....	5 9	5 7	6 7½
'89....	6 1½	5 2	6 4½
1890....	6 1	4 7½	5 11
'01....	5 11	4 9	5 9½
1892....	5 10½	5 1½	5 10½
'93....	6 3	6 7½	7 4
'94....	6 1	5 6	6 1½
'95....	5 9	4 10½	5 7½
'96....	5 9	4 4	5 4½
'97....	5 6	4 5	5 4
'98....	5 3	4 6	4 11
'99....	5 3	4 6	5 2
1900....	5 4½	5 2½	5 10½
'01....	5 5	5 10½	6 1
'02....	5 6	6 7	6 6
'03....	5 6	6 7½	6 10½
'04....	5 7½	5 10½	6 3
'05....	5 9	5 10	5 11
'06....	5 9	6 7½	6 8
'07....	5 10½	6 11	7 2
'08....	5 10	6 4½	6 3½

TABLE IX.—*Monthly prices of cattle.* (*a*) *Shorthorns, England and Wales.*

Per stone of 14 lbs. dead weight.

Month.	First quality.						Second quality.					
	1904.	1905.	1906.	1907.	1908.	Average.	1904.	1905.	1906.	1907.	1908.	Average.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
January	7 5	7 7	7 5	7 9	7 9	7 7	6 10	7 1	6 10	7 2	7 2	7 0
February	7 3	7 6	7 5	7 10	7 10	7 7	6 9	7 0	6 10	7 2	7 3	7 0
March	7 4	7 5	7 6	7 9	7 9	7 7	6 9	6 11	6 11	7 2	7 2	6 11
April	7 5	7 7	7 6	7 9	8 0	7 8	6 11	7 1	6 11	7 1	7 4	7 1
May	7 8	7 9	7 7	7 10	8 1	7 9	7 2	7 2	7 0	7 3	7 5	7 2
June	8 1	7 8	7 8	8 2	8 3	8 0	7 5	7 2	7 2	7 7	7 7	7 5
July	7 11	7 8	7 7	8 2	8 2	7 11	7 5	7 2	7 1	7 6	7 5	7 4
August	7 10	7 7	7 5	7 11	7 11	7 9	7 4	7 0	6 11	7 3	7 3	7 2
September	7 9	7 7	7 4	7 9	7 10	7 8	7 3	7 0	6 10	7 0	7 1	7 0
October	7 6	7 5	7 5	7 6	7 10	7 6	7 0	6 11	6 9	6 11	7 2	6 11
November	7 7	7 5	7 7	7 7	7 11	7 7	7 0	6 10	6 11	6 11	7 3	7 0
December	7 9	7 8	7 10	7 8	8 2	7 10	7 1	7 0	7 3	7 0	7 5	7 2
Year	7 7	7 7	7 6	7 10	7 11	7 8	7 1	7 0	6 11	7 2	7 3	7 1

(*b*) *Polled Scots, Scotland.*

Per cwt. live weight.

Month.	1904.	1905.	1906.	1907.	1908.	Average.	1904.	1905.	1906.	1907.	1908.	Average.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
January	36 2	37 3	36 5	37 4	38 5	37 1	33 6	34 5	33 4	33 10	35 2	34 1
February	35 4	36 5	36 3	37 3	37 11	36 8	32 8	33 8	33 1	33 9	34 8	33 7
March	34 10	36 9	36 1	37 1	37 10	36 6	32 6	33 11	33 2	33 10	34 8	33 7
April	35 2	37 2	36 6	37 6	38 2	36 11	32 10	34 5	33 6	34 3	35 1	34 0
May	36 0	37 1	36 4	37 8	38 8	37 2	33 8	34 3	33 5	34 5	35 7	34 3
June	39 3	37 0	37 8	39 11	39 5	38 8	36 10	34 5	34 9	36 8	36 4	35 10
July	39 9	36 10	37 9	39 9	39 5	38 8	37 2	34 4	34 9	36 6	36 6	35 10
August	39 0	36 7	37 4	39 2	39 6	38 4	36 3	33 7	34 3	35 9	35 11	35 2
September	38 5	37 2	37 0	37 9	39 4	37 11	35 2	33 8	33 8	34 4	35 6	34 6
October	38 7	36 10	36 8	37 8	39 11	37 11	34 9	33 9	32 11	33 10	35 10	34 3
November	38 0	36 6	37 2	38 4	39 8	37 11	34 5	33 6	33 5	34 4	35 9	34 3
December	37 8	37 2	38 1	38 10	40 5	38 5	34 3	33 10	34 1	34 10	36 7	34 9
Year	37 4	36 11	36 11	38 2	39 1	37 8	34 6	34 0	33 8	34 8	35 8	34 6

TABLE X.—*Monthly prices of beef.* (*a*) *English.*

Per 14-lb. stone.

Month.	First quality. 1904.	1905.	1906.	1907.	1908.	Average.	Second quality. 1904.	1905.	1906.	1907.	1908.	Average.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
January	6 4	6 4½	5 11	6 5	6 6	6 3½	5 10	5 9	5 6	5 11	6 1	5 10
February	6 3	6 3	6 1	6 4	6 6	6 3½	5 6	5 9	5 9	5 11	6 1½	5 10
March	6 1½	6 4½	6 2	6 4½	6 7	6 4	5 7½	5 10	5 8	5 11	6 2	5 10
April	6 4½	6 6	6 4	6 6	6 10½	6 6	5 10	6 0	5 9	6 1	6 6	6 0
May	6 7½	6 7	6 4½	6 7	7 1	6 8	6 1	6 2	5 11	6 1½	6 9	6 2½
June	6 10½	6 7½	6 6	7 0	7 5	6 11	6 1½	6 1½	6 1	6 7	7 1	6 5
July	7 0	6 6	6 5	6 9	7 3	6 9½	6 4	6 1	6 0	6 4½	6 10½	6 4
August	6 9	6 4	6 4	6 7	6 11	6 7	6 2	5 11	5 10½	6 2	6 6	6 1½
September	6 5	6 3	6 2	6 4	6 6	6 4	5 10½	5 10	5 9	5 11	6 0	5 10½
October	6 3	6 0	5 11	6 1	6 4½	6 1½	5 8	5 7	5 6	5 7½	5 11	5 8
November	6 0	5 8	6 1½	6 1	6 4	6 0½	5 4½	5 2	5 7½	5 7½	5 10	5 6½
December	6 3½	6 0	6 2	6 4	6 8	6 3½	5 7½	5 6	5 8	5 10	6 2	5 9
Year	6 5½	6 3½	6 2½	6 5½	6 9½	6 5	5 10	5 9½	5 9	6 0	6 4	5 11½

(*b*) *Scotch long sides.*

Per 14-lb. stone.

	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
January	6 7	6 10	6 8	6 10	7 1	6 9½	6 1	6 4	6 2	6 5	6 7	6 4
February	6 6	6 7	6 7	6 7	7 0	6 8	6 0	6 1	6 3	6 3	6 6	6 2½
March	6 4	6 7	6 7	6 7	6 11	6 7	5 10	6 1	6 2	6 1	6 6	6 1½
April	6 6	6 7	6 5	6 10	7 0	6 8	6 0	6 3	6 1	6 5	6 8	6 3½
May	6 7	6 8	6 5	6 10	7 1	6 8½	6 1	6 4	6 1	6 5	6 8	6 4
June	7 4	6 10	6 10	7 5	7 5	7 2	6 10	6 5	6 4	6 11	7 0	6 8½
July	7 7	6 10	7 0	7 4	7 6	7 3	7 1	6 5	6 7	6 10	7 1	6 9½
August	7 4	6 10	6 10	7 1	7 5	7 1	6 8	6 4	6 4	6 7	6 11	6 7
September	7 0	6 11	6 10	6 10	7 3	6 11½	6 6	6 4	6 4	6 4	6 9	6 5½
October	6 11	6 9	6 8	6 8	7 4	6 10½	6 2	6 4	6 2	6 2	6 7	6 3½
November	6 10	6 8	6 9	6 10	7 3	6 10½	6 2	6 1	6 2	6 4	6 7	6 3
December	6 11	6 10	6 10	6 11	7 6	7 0	6 3	6 3	6 3	6 4	6 9	6 4½
Year	6 10½	6 9	6 8½	6 11	7 2½	6 10½	6 3½	6 3	6 3	6 5	6 8½	6 4½

TABLE X—*Contd.* *Monthly prices of beef.* (*c*) *Cow and bull.*

Per 14-lb. stone.

Month.	First quality.						Second quality.					
	1904.	1905.	1906.	1907.	1908.	Average.	1904.	1905.	1906.	1907.	1908.	Average.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
January	5 3	5 4½	5 1½	5 4	5 6	5 4	4 4	4 7½	4 5	4 7	4 10	4 7
February	5 0	5 1½	5 2	5 4	5 4½	5 2	3 11	4 4½	4 4½	4 7	4 8	4 5
March	5 1	5 1½	5 0	5 4	5 7	5 3	4 1½	4 5	4 4½	4 7	4 10½	4 6
April	5 2	5 5	5 3	5 4½	5 10	5 5	4 4	4 8	4 7	4 7½	5 1	4 8
May	5 6	5 6	5 3	5 7	5 11	5 7	4 9	4 10½	4 6	4 10½	5 2	4 10
June	5 8	5 5	5 4	6 0	6 2	5 11	4 10½	4 11	4 7½	5 3	5 5	5 0
July	5 10½	5 5	5 4	5 10	6 1	5 8½	5 1½	4 9	4 7½	5 1½	5 4½	5 0
August	5 8	5 4½	5 4	5 7½	5 10½	5 7	5 1	4 8	4 6	4 9	5 1½	4 10
September	5 6	5 4	5 3	5 4	5 5	5 4	4 10	4 7	4 5	4 7½	4 9	4 8
October	5 4	5 1	4 10½	5 0	5 5	5 2	4 7	4 4	3 11	4 3	4 8	4 4
November	5 1	4 9	5 0	5 1	5 4	5 1	4 1½	4 0	4 1½	4 4½	4 6	4 3
December	5 3	5 1½	5 1½	5 2	5 6	5 3	4 4½	4 4½	4 3	4 5	4 8	4 5
Year	5 4½	5 3	5 2	5 5	5 8	5 4½	4 6½	4 6½	4 4½	4 8	4 11	4 7

(*d*) *U.S.A. and Canadian.* *Port killed.*

Per 14-lb. stone.

	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s* *d.*
January	6 1	6 3	5 9	6 4	6 6	6 2	5 2	5 5	5 3	5 9	6 0	5 6
February	5 9	5 10	5 11	6 2	6 4½	6 0	5 3	5 2	5 7	5 7½	5 10½	5 6
March	5 7½	6 10	5 10	6 3	6 5	6 0	5 4	5 2	5 5	5 9	6 1½	5 7
April	6 0	6 2	6 0	6 5	6 10	6 3	5 4½	5 7	5 7½	6 1	6 6	5 10
May	6 1	6 4½	6 0	6 5	7 0	6 4½	5 8	5 10	5 6	6 1	6 7½	5 11
June	6 6	6 4	6 0	6 10	7 3	6 7	6 0	5 7½	5 8	6 4½	6 7½	6 1
July	6 9	6 3	6 1	6 8	7 1	6 7	6 1½	5 9	5 7	6 3	6 6	6 0½
August	6 4½	6 0	6 0	6 6	7 1	6 5	5 11	5 5	5 7½	5 11	6 4	5 10
September	6 1½	5 11	5 10½	6 4	6 4½	6 1½	5 5	5 4	5 2	5 10½	5 10½	5 6
October	6 1½	5 8	5 9	6 3	6 5	5 11½	5 4	5 1	4 11	5 9	5 10	5 5
November	5 9	5 4	5 11	6 2	6 3	6 0½	5 1	4 8	5 6	5 7	5 8	5 4
December	6 1	5 9	6 0	6 4	6 8	6 2	5 2	5 2	5 4½	5 9	6 0	5 6
Year	6 1	5 11½	5 11	6 4½	6 8	6 2½	5 6	5 4	5 5	5 11	6 2	5 8

TABLE X—*Contd.* *Monthly prices of beef.* (*e*) *American chilled.*

Per 14-lb. stone.

Month.	Hind quarters. First quality.						Fore quarters. First quality.					
	1904.	1905.	1906.	1907.	1908.	Average.	1904.	1905.	1906.	1907.	1908.	Average.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
January …………	6 1½	6 8	5 9	6 9	6 10	6 5	4 2	4 5	3 9	4 7	4 7	4 4
February …………	6 0	6 1½	6 7	6 6	6 8	6 4½	4 3	4 1	4 5	4 6	4 7½	4 4½
March …………	6 2	5 11	6 1½	6 6	6 8	6 3	4 1½	4 2	4 0	4 4	4 7	4 3
April …………	6 1½	6 7½	6 1	6 7½	7 7	6 7	4 3	4 4	4 3	4 4	5 4½	4 6
May …………	6 10	6 10½	6 4½	6 8	7 10	6 11	4 1½	4 4½	4 2	4 5	5 1½	4 5
June …………	6 9	6 10½	6 7	7 0	8 1½	7 1	4 1	4 3	4 0	4 7	5 4½	4 5½
July …………	7 9	6 10½	6 7½	7 0	7 9	7 2	5 0	4 1	4 0	4 8	4 11	4 6
August …………	7 11	6 7½	6 11	7 0	8 0	7 3½	4 11	4 0	4 3	4 6	5 4	4 7
September ……	6 4	6 8	6 10	7 3	7 3	6 10	4 1	4 3	4 1	4 8	4 10½	4 5
October…………	7 0	6 7½	6 9	7 2	7 6	7 0	4 3	4 2	4 1	4 5	4 10½	4 4
November…………	6 4	6 2	6 9	7 3	6 9	6 8	4 0	4 0	4 7½	4 8	4 7½	4 5
December…………	6 10	6 6	6 5	6 10½	6 11	6 8½	4 3	4 1½	4 4½	4 7½	4 7	4 5
Year …………	6 8	6 6½	6 6	6 10½	7 4	6 9½	4 3½	4 2	4 2	4 6½	4 11	4 5

(*f*) *Argentine chilled.*

Per 14-lb. stone.

	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
January …………	4 7½	5 3	4 0	4 10	4 11	4 9	3 6	3 11	3 2	3 11	3 9	3 8
February …………	4 6	4 10	5 0	4 11	5 1½	4 10½	3 8	3 6	3 9	3 10	3 10½	3 9
March …………	4 4½	4 4½	4 5	4 11	5 2	4 8	3 7	3 6	3 4½	3 10	3 9	3 7
April …………	4 5	4 11	4 5	5 3	6 1	5 0	3 9	3 7	3 4	3 9	4 5	3 9
May …………	5 4	5 4	4 7½	5 4	6 3	5 4½	3 7	3 7	3 5	3 11	4 1½	3 9
June …………	5 5	5 3	4 9	5 10½	6 9	5 7	3 5	3 4½	3 3	4 1½	4 4½	3 8½
July …………	6 6	5 4	4 9	5 7	5 10	5 7	4 0	3 5	3 2	4 0	4 1	3 9
August …………	6 7	5 1	5 3	5 5	6 6	5 9	3 11	3 2	3 5	3 11	4 3	3 9
September ………	4 8	4 10	5 1	5 8	5 10	5 3	3 2	3 3	3 4½	3 10	4 2	3 7
October…………	4 9½	4 7	4 8	5 4½	5 8	5 0	3 3	3 4	3 3	3 7	4 2	3 6
November…………	4 7	4 1½	5 1	5 4½	5 0	4 10	3 1½	3 4½	4 0	3 8	3 11	3 7
December…………	4 10½	4 7	4 10½	5 0	5 1½	4 11	3 6	3 7½	3 10½	3 7	3 11	3 8
Year …………	5 0½	4 10½	4 8½	5 3½	5 8	5 1½	3 6½	3 5½	3 5½	3 10	4 1	3 8

TABLE XI.—*Monthly prices of sheep.* (*a*) *Downs, England and Wales.*

Per lb. dead weight.

Month.	First quality.						Second quality.					
	1904.	1905.	1906.	1907.	1908.	Average.	1904.	1905.	1906.	1907.	1908.	Average.
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
January	8¾	9	9	9½	9	9	7¾	8½	8¼	8¾	8¼	8¼
February	8½	9	9¼	9¼	9	9	7¾	8¼	8½	8½	8¼	8½
March	8¾	9	9½	9¼	9¼	9¼	8	8½	8¾	8¾	8½	8½
April	8¾	9	8¾	8¾	8¾	8¾	8¼	8½	8	8¼	8	8¼
May	8¾	8½	8½	9	8¼	8¾	8	8	8	8¼	7½	8
June	8¾	8¼	8½	9	8¼	8½	7½	7½	7¾	8¼	7½	7¾
July	8½	8¼	8½	9	8¼	8½	8	7¾	7¾	8¼	7½	7¾
August	8½	8½	8½	9	8¼	8½	7¾	7¾	7¾	8¼	7¼	7¾
September	8½	8½	8¾	9	8	8½	8	7¾	8	8¼	7	7¾
October	8½	8½	8¾	9	8	8½	7¾	8	8	8¼	7	7¾
November	8¾	8¾	9¼	9	8	8¾	8	8	8¼	8¼	7	8
December	8¾	9	9¼	9	7¾	8¾	8¼	8	8½	8¼	7	8
Year	8¾	8¾	8¾	9	8½	8¾	8	8	8	8¼	7½	8

(*b*) *Cross-breds, Scotland.*

Per lb. dead weight.

Month.	First quality.						Second quality.					
	1904.	1905.	1906.	1907.	1908.	Average.	1904.	1905.	1906.	1907.	1908.	Average.
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
January	8½	9¼	9	9½	9¼	9	7¾	8¼	8¼	8½	8¼	8¼
February	8¾	9	9	9½	9½	9¼	8	8¼	8¼	8½	8½	8¼
March	8¾	9	9½	9½	9½	9¼	8	8¼	8½	8½	8½	8¼
April	9½	9¼	10	9¾	9½	9½	8½	8¼	9	8¾	8½	8½
May	10¼	9	10	10¼	9	9¾	9¼	8	9	9	8	8¾
June	10¼	8½	10	10	8¾	9½	9¼	7¾	9	9	8	8½
July	9¼	8¼	9½	9¼	8½	9	8½	7¾	8½	8½	7¾	8¼
August	9	8½	9¼	9¼	8¼	8¾	8¼	7¾	8½	8½	7½	8
September	9	8¾	9½	8¾	8	8¾	8¼	8	8½	8	7¼	8
October	9	8¾	9¼	9	8	8¾	8	7¾	8¼	7¾	7¼	7¾
November	9	8¾	9¼	9	8	8¾	8	8	8¼	8	7	7¾
December	9¼	9	9½	9¼	8	9	8¼	8	8½	8	7	8
Year	9¼	8¾	9½	9½	8¾	9¼	8¼	8	8½	8½	7¾	8¼

TABLE XII.—*Monthly prices of mutton.* (*a*) *English.*

Per lb.

Month.	First quality.						Second quality.					
	1904.	1905.	1906.	1907.	1908.	Average.	1904.	1905.	1906.	1907.	1908.	Average.
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
January	7⅛	7½	7⅜	7⅝	7⅝	7½	6⅛	6⅜	6⅝	6⅞	6⅞	6⅝
February	7⅛	7⅜	7½	7½	7⅞	7½	6¼	6⅜	6¾	6⅞	7	6⅝
March	7⅛	7½	7¾	7½	8	7⅝	6⅜	6½	7⅛	6⅞	7¼	6⅞
April	7⅜	7⅝	7⅞	7⅝	8	7¾	6¾	6⅞	7	6⅞	7⅛	6⅞
May	7¾	7⅝	7½	7⅞	7⅞	7¾	6⅞	6⅞	6⅞	7⅛	7	7
June	7⅞	7½	7¾	8¼	7¾	7⅝	6⅞	6¾	7	7⅜	7	7
July	7½	7¼	7⅝	7⅞	7½	7½	6⅝	6⅜	6¾	7	6⅞	6¾
August	7½	7⅛	7½	7½	7¼	7⅜	6½	6⅜	6¾	6¾	6⅝	6⅝
September	7½	7⅛	7⅝	7¼	6¾	7¼	6½	6⅛	6⅞	6⅝	6⅛	6½
October	7⅜	7⅛	7½	7¼	6⅞	7¼	6½	6⅜	6¾	6⅜	6⅛	6⅜
November	7⅜	7	7½	7¼	6¾	7⅛	6⅜	6¼	6¾	6½	6	6⅜
December	7¼	7¼	7⅝	7⅜	6⅝	7¼	6⅜	6½	6⅞	6½	6	6½
Year	7⅜	7⅜	7⅝	7⅝	7⅜	7½	6½	6½	6⅞	6¾	6¾	6⅝

(*b*) *Scotch.*

Per lb.

Month.	First quality.						Second quality.					
	1904.	1905.	1906.	1907.	1908.	Average.	1904.	1905.	1906.	1907.	1908.	Average.
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
January	7⅝	7⅞	7½	7⅞	8	7¾	6¼	6⅝	6½	7	7	6⅝
February	7½	7¾	7⅝	7¾	8⅛	7¾	6⅜	6½	6¾	7	7	6¾
March	7½	7⅞	7⅞	7¾	8¼	7⅞	6⅜	6¾	7⅛	7	7⅜	6⅞
April	8¼	8	8¼	8⅛	8⅜	8¼	7¼	7⅛	7½	7½	7⅝	7⅜
May	8⅜	8	8¼	8⅝	8½	8⅜	7⅜	7¼	7⅝	7⅝	7⅝	7½
June	8¾	7⅞	8¾	8⅞	8½	8½	7½	7⅛	7⅞	8	7⅝	7⅝
July	8¼	7⅝	8⅜	8¼	8⅛	8⅛	7⅛	6⅞	7½	7⅜	7¼	7¼
August	7⅞	7½	8⅛	7⅞	7⅝	7¾	6¾	6⅝	7⅛	7	6⅞	6⅞
September	7¾	7½	8¼	7½	7¼	7⅝	6½	6½	7⅛	6¾	6⅛	6½
October	7¾	7½	7⅞	7½	7⅛	7½	6⅝	6⅜	6⅞	6¼	6⅛	6½
November	7¾	7⅜	7¾	7½	6⅞	7½	6⅝	6⅜	6¾	6⅜	5⅞	6⅜
December	7⅝	7½	7¾	7½	6¾	7⅜	6½	6⅜	6⅞	6½	5¾	6⅜
Year	7⅞	7⅝	8	7⅞	7¾	7⅞	6¾	6¾	7⅛	7	6⅞	6⅞

TABLE XII—*Contd.* *Monthly prices of mutton.* (c) *Imported frozen.*

Per lb.

Month.	Argentine. First quality.						New Zealand. First quality.					
	1904.	1905.	1906.	1907.	1908.	Average.	1904.	1905.	1906.	1907.	1908.	Average.
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
January …………	3⅝	3⅞	3¼	4	3¼	3⅝	4¼	4¾	4	4¾	4⅛	4⅜
February …………	3⅞	3⅝	3⅜	4	3¼	3⅝	4⅞	4½	4	4⅞	4⅛	4½
March …………	4	3⅝	3¾	3⅞	3⅝	3¾	4½	4½	4⅛	4¾	4¼	4⅜
April …………	3⅞	3¾	3¾	3¾	3⅞	3¾	4½	4½	4⅜	4⅜	4½	4½
May …………	3⅞	3¾	3⅞	3¾	3¾	3¾	4½	4½	4⅜	4⅜	4½	4½
June …………	3⅞	3⅝	3¾	3⅝	3¾	3¾	4½	4½	4	4⅜	4⅜	4⅜
July …………	3⅞	3⅝	3⅝	3½	3½	3⅝	4½	4⅝	3⅞	4¾	4½	4½
August …………	3⅞	3¾	3⅝	3⅜	3½	3⅝	4⅜	4⅝	3⅞	4¼	4½	4⅜
September …………	3⅞	3¾	3⅝	3⅜	3⅝	3⅝	4½	4⅜	3¾	4⅜	4½	4¼
October …………	3¾	3½	3⅝	3¼	3⅝	3½	4½	4⅛	3⅞	4¼	4½	4¼
November …………	3¾	3⅜	4⅛	3¼	3⅝	3⅝	4½	4	4⅞	4¼	4¼	4⅜
December …………	4⅛	3⅜	4	3¼	3½	3⅝	4⅞	4⅛	4⅞	4⅛	4	4⅜
Year …………	3⅞	3⅝	3¾	3⅝	3⅝	3¾	4½	4½	4⅛	4½	4⅜	4⅜

TABLE XIII.—*Monthly prices of pigs.* (*a*) *Porkers: England and Wales.*

Per stone of 14 lbs. dead weight.

Month.	First quality.						Second quality.					
	1904.	1905.	1906.	1907.	1908.	Average.	1904.	1905.	1906.	1907.	1908.	Average.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
January	6 3	6 5	7 6	7 6	6 9	6 11	5 10	5 11	7 1	7 0	6 4	6 5
February	6 0	6 8	7 8	7 6	6 8	6 11	5 9	6 3	7 3	7 0	6 3	6 6
March	6 1	6 10	7 9	7 5	6 7	6 11	5 9	6 5	7 5	7 0	6 2	6 7
April	6 1	6 10	7 7	7 1	6 6	6 10	5 9	6 6	7 2	6 9	6 1	6 5
May	6 1	7 0	7 5	7 2	6 4	6 10	5 9	6 7	6 11	6 9	5 11	6 5
June	6 0	6 10	7 3	7 0	6 2	6 8	5 9	6 4	6 10	6 7	5 7	6 3
July	5 11	6 8	7 2	7 0	6 4	6 7	5 8	6 3	6 8	6 7	5 11	6 3
August	6 2	6 10	7 4	7 2	6 8	6 10	5 11	6 5	6 11	6 9	6 2	6 5
September	6 4	7 2	7 5	7 1	6 10	7 0	6 0	6 9	7 1	6 8	6 5	6 7
October	6 4	7 5	7 7	7 0	6 9	7 0	6 1	7 1	7 1	6 6	6 3	6 7
November	6 5	7 7	7 6	6 11	6 8	7 0	6 1	7 1	7 0	6 6	6 3	6 7
December	6 5	7 6	7 7	6 11	6 9	7 0	5 11	7 1	6 11	6 6	6 3	6 6
Year	6 2	7 0	7 6	7 2	6 7	6 11	5 10	6 7	7 0	6 9	6 2	6 6

(*b*) *Bacon pigs: England and Wales.*

Per stone of 14 lbs. dead weight.

	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
January	5 7	5 8	6 11	6 8	6 4	6 3	5 2	5 4	6 6	6 4	5 11	5 10
February	5 6	6 1	7 1	6 10	6 3	6 4	5 2	5 8	6 8	6 5	5 9	5 11
March	5 7	6 3	7 2	7 0	6 1	6 5	5 3	5 11	6 9	6 7	5 8	6 0
April	5 7	6 5	7 2	6 10	6 1	6 5	5 2	6 0	6 9	6 4	5 8	6 0
May	5 6	6 6	6 11	6 9	5 11	6 4	5 2	6 0	6 6	6 4	5 6	5 11
June	5 6	6 6	6 10	6 8	5 10	6 3	5 2	5 11	6 5	6 4	5 3	5 10
July	5 6	6 4	6 9	6 8	6 0	6 3	5 3	5 9	6 3	6 3	5 6	5 10
August	5 8	6 7	6 11	6 10	6 4	6 6	5 5	6 1	6 5	6 4	5 9	6 0
September	5 10	6 8	6 11	6 9	6 6	6 6	5 6	6 4	6 6	6 3	6 0	6 1
October	5 9	6 9	6 10	6 6	6 4	6 5	5 5	6 4	6 5	6 0	5 10	6 0
November	5 7	6 11	6 8	6 4	6 3	6 4	5 3	6 6	6 4	5 11	5 9	5 11
December	5 7	6 10	6 7	6 5	6 2	6 4	5 3	6 6	6 2	5 11	5 8	5 11
Year	5 7	6 5	6 11	6 8	6 2	6 4	5 3	6 0	6 6	6 3	5 8	5 11

TABLE XIV.—*Monthly prices of pig-meat.* (*a*) *British pork: Great Britain.*

Per 14-lb. stone.

Month.	First quality.						Second quality.					
	1904.	1905.	1906.	1907.	1908.	Average.	1904.	1905.	1906.	1907.	1908.	Average.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
January	6 8	6 7½	8 0	7 10½	7 4½	7 3½	5 5	5 7½	7 1½	7 0	6 7	6 4
February	6 5	6 10½	8 1	7 10	7 1	7 3	5 4	5 11	7 4	6 11	6 4½	6 4½
March	6 6	7 2	8 0	7 9	6 11	7 3	5 4	6 1½	7 2	6 11	6 2	6 4
April	6 6	7 2	7 9	7 4½	6 11	7 1½	5 4½	6 4½	7 0	6 8	6 2	6 4
May	6 1	7 0	7 4½	7 1½	6 8	6 11	5 4	6 1½	6 7½	6 6	5 10½	6 1
June	6 2	6 10½	7 1½	7 1½	6 7½	6 9½	5 3	6 1½	6 4½	6 5	5 10	6 0
July	6 1½	6 10	7 1	7 2	6 7	6 9	5 3	5 10½	6 6	6 4½	5 8	5 11
August	6 4	6 10½	7 3	7 2	6 9	6 10½	5 6	6 1	6 7	6 5	6 1	6 1½
September	6 9	7 6	7 6	7 3	7 1	7 2½	5 10½	6 8	6 10½	6 6	6 4½	6 5½
October	7 0	7 10½	7 11	7 5	7 1½	7 5½	6 0	7 0	7 3	6 7½	6 4½	6 8
November	6 9	7 10½	7 11	7 4½	7 2	7 5	5 8	7 0	7 1	6 7	6 6	6 7
December............	6 8	7 10½	7 11	7 4	7 2	7 4½	5 8	7 0	7 1	6 6	6 6	6 6½
Year	6 6	7 2	7 8	7 4½	6 11	7 1½	5 6	6 4	6 11	6 7½	6 2	6 3½

TABLE XIV—*Contd.* *Monthly prices of pig-meat.* (b) *Irish bacon: Great Britain.*

Per 14 lbs.

Month.	First quality.						Second quality.					
	1904.	1905.	1906.	1907.	1908.	Average.	1904.	1905.	1906.	1907.	1908.	Average.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
January	6 11	7 0	8 2	7 9	7 6	7 6	6 7	6 6	7 10½	7 4½	7 1½	7 1
February	6 10	7 6	8 4	7 10	7 3	7 7	6 4½	7 0	7 11	7 5	6 8	7 1
March	6 11	7 11	8 4½	7 10	7 2	7 7½	6 6	7 5	8 0	7 6	6 8	7 2½
April	7 2	8 3	8 10	8 1½	7 8	8 0	6 8	7 9	8 4½	7 8	7 1	7 6
May	7 7	8 4½	8 6	8 2	7 10	8 1	6 10	7 10½	8 0	7 10½	7 1	7 6½
June	7 5	8 4½	8 4½	8 3	8 0	8 1	6 9	7 10½	8 1	8 1½	7 4	7 7½
July	7 4	8 5	8 7½	8 8	9 0	8 5	6 9	7 11	8 3	8 2	8 5	7 11
August	7 10½	8 9	8 10	8 9	8 9	8 7	7 4½	8 4	8 5	8 4	8 2	8 1½
September	7 9	8 4½	8 7	8 3	8 9	8 4	7 3	8 1	8 3	7 11	8 3	7 11½
October................	7 5	8 0	8 5	8 1	8 4½	8 1	7 1	7 8	8 1½	7 8	7 10½	7 8
November............	6 9	8 1	7 9	7 7½	7 11	7 7½	6 4	7 7½	7 4½	7 3	7 4	7 2
December	6 5	8 1	7 6	7 4	7 5	7 4	6 1	7 8	7 2	7 1	6 10½	6 11½
Year	7 2	8 1	8 4½	8 1	7 11½	7 11	6 8	7 7½	8 0	7 8	7 4½	7 5½

(c) *Irish hams: Great Britain.*

Per 14 lbs.

	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
January	10 10	10 10½	12 7	12 4	11 4	11 7	9 4	9 5	11 7½	11 7½	10 4	10 5½
February	11 4	10 5	12 7½	12 1	11 1½	11 6	10 0	8 11	12 2	11 1	10 1	10 5½
March	11 3	11 0	12 6	12 0	10 7½	11 5½	9 11	9 5	11 10½	11 4	9 7	10 5
April	11 0	11 10	12 7½	11 6	10 10	11 6½	10 0	10 1	11 10	10 10	9 6	10 5½
May	11 4	12 1½	12 9	11 7	10 9	11 8½	10 1	10 4½	12 0	10 11	9 4½	10 6½
June	11 6	12 6	12 9	11 11	11 1½	11 11½	10 1½	10 9	11 10½	11 2	10 2	10 10
July	11 8	12 10½	12 10½	12 5	12 3	12 5	10 7½	11 6	11 10½	11 4½	11 4	11 4
August	12 7½	12 10½	13 1½	12 8	12 7½	12 9½	11 2	12 0	12 2	11 8	11 6	11 8½
September	12 4½	12 8	13 1	12 8	12 7½	12 8	11 1½	11 10	12 4	11 4½	11 4½	11 7½
October...............	11 10	12 7½	13 2	12 2	12 8	12 6	10 3	11 7½	12 5	10 10½	11 7½	11 4½
November...........	11 5	12 3	12 7½	11 10	12 7½	12 2	9 4½	11 3	12 0	10 6	11 2	10 10½
December...........	11 1½	12 5	13 0	11 7	12 7	12 2	9 6	11 7	12 1½	10 8	11 4½	11 0½
Year	11 6	12 1	12 10	12 1	11 9	12 0½	10 1½	10 9	12 0	11 1½	10 7½	10 11

PROCEEDINGS *on the* 18TH MAY, 1909.

THE CHAIRMAN said he regretted to have to open their proceedings by announcing to the Fellows that since their last meeting they had lost one of their most esteemed colleagues, one of the oldest members of the Society, and a personal friend of his own—Mr. Frederick Hendriks—whose name must be known to all who studied the annals of the Society, and knew how much he did for it in the past. A Fellow for more than half a century, and a Vice-President on numerous occasions, he had represented that Society at the older series of International Congresses, and was a regular attendant at the more recent gatherings of the International Statistical Institute. In his death, at the good age of 82, they now mourned the loss of a most amiable colleague, an able statistician, and a conscientious worker in all that concerned the management of their Society. At their meeting on Thursday last the Council passed a unanimous vote of regret and of sympathy with his family in the loss they had sustained. The older members of the Society, who had played their part in the statistical work of the nineteenth century, were steadily becoming fewer. Since he last attended a meeting in that place there had been no less than three sad gaps in their ranks, namely, Mr. Wilson-Fox, Mr. Czarnikow, and now Mr. Hendriks.

DISCUSSION *on* MR. R. H. HOOKER'S PAPER.

THE CHAIRMAN, in inviting discussion on this elaborate and timely Paper, said they would all recognise the ability with which the author had handled a singularly complex subject, which offered one of the most puzzling of statistical questions. Much more material was no doubt available now than formerly, thanks to the work of a Committee of that Society and to the increased statistics at command, for starting discussions as to the actual bulk of our meat supply from a better basis of fact than was open to earlier investigators.

MR. HARALD FABER, called upon by the Chairman, said he had not come prepared to take part in the discussion. He had listened to the Paper with the greatest interest, and considered it contained a large amount of very useful information. He noticed the prediction that the next generation would have to pay a high price for its meat was accompanied by a qualification, namely, unless some radical change was made in the diet of the people in the United Kingdom. If the supply of meat should fall short of the demand, and the price rise very much, he thought advocates of a different diet, containing little or no meat, would gain ground; and in that way the smaller supply of meat might be made to go round. With regard to the import of meat from Denmark, Diagram 9 showed that almost the total imports from Denmark were pig-meat, and this came mostly in the form of bacon. In Denmark some very stringent regulations had been recently passed with regard to the control of the meat exported, and the recommendation of the previous Royal Commission on Tuberculosis had been adopted, to the effect that pig-meat derived from animals with even the slightest trace of tuberculosis should not be used for food. By a law of last year the export of meat was placed under strict control, and no meat whatever from pigs suffering in the slightest degree from disease was now sent to this country. This applied also to bacon, which was not the case in other countries exporting to the United Kingdom. Danish bacon could therefore be relied upon more safely than that from any other country. He had much pleasure in expressing his gratitude to the reader of the excellent paper.

Mr. T. A. Welton said Mr. Hooker stated on page 327, as a matter of fact, that during the late nineties Australia sent as much beef as mutton to this country; but the diagram seemed to show that since then the supply of beef had shrunk to practically nothing at all. He should be glad to know the explanation. He could confirm from experience one point put forward, viz., as to the greater weight of the animals now being produced in the Argentine. The stock there was being improved, and the weight of the cattle was surprising, which of course meant a larger supply of meat. Another point illustrating possibilities for home supply was that at the time of the Japanese war, and since, the Russian army was considerably provisioned with meat from Australia.

Mr. George Goodsir said he might suggest an explanation with regard to the cessation of the beef supply from Australia; it was caused in the first place by the tremendous droughts extending over five years; and, again, the growth of the trade had been checked, so far as this country was concerned, by the fact that the supplies found a better market in the eastern hemisphere. The Chairman had remarked on the puzzling nature of the questions raised by the statistics of meat, but it should be borne in mind that the figures with regard to the supply of meat were different from those of almost any other trade. For instance, in the case of wheat, very nearly the total production of wheat for the year was available for marketing in the year, but no more. In the case of meat, it was only a possible percentage that was marketable; and if prices rose or other conditions varied, the output could be vastly increased, and therefore the annual statistics with regard to the actual supplies in various countries were largely theoretical. The actual number of animals was known, but the proportion that was going to be sent to market was unknown, and that made the statistics very puzzling. Mr. Hooker was quite right in his conclusion—that the centre of supply was shifting from North to South America, for which there was more than one reason. First of all, the farmers in the States were changing their methods, because they were sick of the dealings of the big Trust. They were so much in their hands at every turn that to a large extent they were giving up the fattening of cattle, and going in for the production of wheat and maize. Another factor was the growth of the population in America. The introduction and use of chilling plant in South America was of great importance. Within the last five or seven years it had been made possible to bring beef from the Argentine in a chilled condition, which was opening up a wider market in this country for the output of the South American herds than when only frozen beef was shipped. That process was being assisted by an invention called the Linley process, which enabled other freezing works to send supplies of chilled beef to this country. The same method was now being experimented with in Australia and New Zealand. The author referred to the supplies from the Southern hemisphere, and especially from Australasia, as a very uncertain quantity; and no doubt the export from Australia was uncertain, but that would be removed to some extent by the growth of irrigation. But whilst the Australian supply was irregular, that from New Zealand, which was the bulk, was very steady, the flocks there remaining much the same during the last ten years—about 20,000,000 head. Another matter which had not been noticed was the large supply of mutton which he believed would be coming in the near future from Patagonia and Uruguay. Patagonia, especially, could not produce beef at all, but could send only mutton, and that would be sent in increasing quantities.

Mr. A. H. H. Matthews (Secretary, Central Chamber of Agriculture) said this Paper was rather beyond his criticism. The only comment he would make was, that he was rather surprised at Mr. Hooker's conclusion that, taking the world over, where grazing land was transformed into arable, mutton disappears. That might be so taking the world over, but in England, with which only he was personally acquainted, it had the contrary effect; where arable land was turned into pasture, the head of stock tended to diminish. He did not know whether it would be possible to give a table showing, over a period of years, the increase or decrease of arable land, and the corresponding increase or decrease of sheep and stock in various countries, but, if such figures were available, they would be interesting and instructive.

Mr. W. S. Barclay said he should like to deal with one point mentioned in the paper where the author said that he regarded the production of herd cattle in the United States and Canada as possibly oscillating between two curves, since it was less now in proportion to the increase of the population than it was before. One had to regard the conditions under which this class of cattle had been raised in the past. All herd cattle in the Western States, and even to-day in the West and North-West of Canada, were raised on practically free pasture, and it was very easy to raise cattle at a profit where you got the land and grass for nothing. At present, however, the farmers were invading the large ranch areas in Texas, Kansas, and the South-West, and taking up land which the stock farmers could not possibly pay the same price for. Even in Canada to-day he regarded ranch cattle farming as being on a false basis, they only made it pay where they got the land for a nominal rental. A man took up a small piece of land as homestead and raised cattle on perhaps 100 square miles of land all round it, for which he paid only a fractional rent. If the drop in rough herd cattle was simply a temporary depression, owing to prices, it would be different, but those who had hitherto raised cattle under those conditions would never raise them again, because when the farmer came in the rancher went out. That had been the course of evolution in the Western States, where even the sheep farmer was encroaching on the cattle rancher. Fights sometimes resulted between the two, and whole droves of sheep had been driven over precipices to get rid of them. If they were going to look for ranch cattle, they must go to countries where it paid the farmer to buy land and raise cattle on it; and such countries were extremely few. The next point was that the supply of mutton for consumption here had not corresponded with the number of sheep; when the world's total number of sheep was smaller, the supplies had been greater. He took it that the supply of mutton was dependent more than any other class of meat on the price of wool and the cost of freight. He had seen as many as 2,000 or 3,000 sheep with their throats cut, left on the beach in Patagonia, simply because they could not be got away. They were raised entirely for wool, not for mutton. In some other parts of the world sheep were boiled down, and their produce came to this country in the shape of mutton fat and not as meat.

Mr. R. H. Rew said this was one of the most interesting and valuable papers recently submitted to the Society, and it had obviously entailed a considerable amount of research and great mastery of the available data. He congratulated himself on having been indirectly the cause of its submission to the Society, as it was due to Mr. Hooker's appointment to give evidence on behalf of his Department before the Meat Combinations Committee that he had been led to pursue his inquiries in the direction which had led to this paper. Speaking generally, he thought it might be taken that the paper was on the whole reassuring as to the immediate prospects of our meat supplies, and, although it contained a warning to future generations, the present generation might be fairly certain of getting their beef, at any rate at Christmas. It was also interesting to find that we had been able practically to maintain our home supply of meat within the period dealt with by the paper. It was rather a feather in the cap of British agriculture that in spite of difficulties and competition it had been possible to turn out as much meat from the land of this country as was done twenty years ago. Considering how much some other branches of agriculture had developed, particularly market gardening, the cultivation of vegetables and fruit, and above all the production of milk, notwithstanding a declining acreage not only of arable land but of the farm area as a whole, it would appear that farmers had well maintained the productivity of the soil. It was to be hoped that, possibly with the assistance of development grants and other means, the productivity per acre of the soil of this country would be still further increased. The most interesting point in reviewing the whole question of meat supplies was the immense development of the dead-meat trade. Things had moved very rapidly within recent years, by reason mainly of the ingenuity of the inventor who had introduced new processes to enable meat to be carried long distances without deterioration. It was, after all, not so very long ago that the only methods of preserving meat for consumption was by salting or drying. Their fathers used to kill the winter supply in the autumn, and live on it till the spring came round; and the same process was used for ship stores. The next stage was the introduction of canning, which had an enormous development. Many of them could remember when tinned meat was almost a novelty; but now there was hardly a corner of the earth where man's tracks were not marked by the debris of civilisation in the shape of old meat tins. Later on came the introduction of freezing as a means of preserving meat in a palatable form. The latest development, which had already been referred to, was the chilling process, by which it was possible to convey meat in a form attractive to the consumer from long distances. If one could forecast the future, he thought it lay in the further development of the dead-meat trade. He thought that the transit of live animals over long distances, whether by road or sea, would before long be regarded as an archaic and barbarous form of bringing meat to the consumer, and would be looked upon as a relic of a bygone age, and as obsolete as the practice of driving beasts by road from Aberdeenshire to Smithfield in the pre-railway era. He agreed with Mr. Goodsir's remarks as to the special difficulty of this subject, owing to the fact that the available statistics largely consisted of not the amount of produce coming into consumption in any year, as in the case of crops, but merely the gross source of supply, from which they had to estimate the amount coming forward in a given time. But so far as this country's consumption was concerned, the conclusions of the Paper were mainly based on the actual imports from time to time, and the estimated figures related only to home production, for which this Society had to bear a certain amount of responsibility.

Mr. C. A. COGGAN said he had been connected for the last seventeen years with this business, so that he had listened to the paper with great interest. There had been an interesting *résumé* of the trade in general; but he differed from the author, where he put down to certain land causes the fall in the number of cattle during certain periods. He (the speaker) put it down to foreign competition. Those who could recall the introduction of American beef would remember that it came at a time when public opinion was very much against everything foreign. Naturally, therefore, in order to force the market, the Americans had to put down their produce to a very low figure. He remembered the time when Scotch loins of beef were selling in Smithfield at 11*d*., and American at 4*d*.

or 5*d*. It was that state of things which brought English prices down at the time referred to in the paper. American beef had sprung from the old English stock, which had been exported to the States and to Canada, so that it was really British meat fed in America, and was therefore practically the same article as they had in England. Consumers found it tender, because, having been killed in the States and exported, it was eaten about six weeks from the time when the animal was killed. Seventeen years ago refrigerating, even so far as the local butcher was concerned, was not much attended to; and meat was often killed on Monday and sold on Saturday. Hence the American article got a footing which it would otherwise not have had. Huge sums of money must have been lost by the Americans at the outset, and that led to the fall in the price of English meat. With regard to Canada, he felt very strongly that being such a very cold country it would be well for England if she were once again to look over those Acts which prohibited Canadian cattle coming into this country, in order that our farmers might have more cattle on their land. The cattle could come over here at 10*l*. a head, which would give work to our farmers to fatten them and they might be brought on to the market at a profit. There was no doubt that there was going to be a rise in the price of meat. The meat trade of the world in the course of a few years, if it went on as it had been going, was coming into the hands of four American Beef Trust men, who met at Smithfield every morning to regulate the price of meat; and it seemed as if the world's supply was getting into the hands of those four men. They had practically a working agreement with Argentina, and they expected shortly to have a big control in Australia; they were actually controlling the States, and the bulk of the Canadian store cattle were also going into the States. Unless something was done to make England a bigger feeding ground for cattle, it looked as if we were going to have the price of meat dictated by four men.

The CHAIRMAN said the discussion had served to emphasise several features which dominated and changed the whole position of the meat import trade. He regarded as first among these the substitution of a steadily developing dead-meat trade for the dwindling live-meat imports in which a former generation believed. He looked forward to the gradual abolition, within a reasonable time, of the latter trade. Disagreeing with the last speaker he deemed it a very uneconomical method of introducing supplies, to drag over live animals from the other side of the ocean and sell them here either as store cattle or fat cattle. The graphic rise of the recent curves of meat imports from Argentina in the diagram appended illustrated what he meant. The course of events was proving the wisdom of those who originally, and for very good reasons, restricted the trade in these live animals. Had it not been for those restrictions placed on the introduction of animals which were possible vehicles of dangerous contagious diseases, the stock in this country would not have been maintained at anything like the satisfactory proportions now shewn, nor would the consumer have had anything like the same secure basis for the home-grown section of his food, which had been to a large degree freed from exposure to the risks of imported disease. It was not merely the actual amount of disease which was imported under the old system, but the uncertainty conveyed to the minds of the breeders by the apprehensions of possible invasions of contagious maladies, which hampered the extension of our own herds and reduced the out-turn of meat from the actual head of stock maintained in this country. Coming to the Paper itself he was disposed to object to any very confident deductions based on the census of pigs, being impressed with some doubt as to the mode in which those figures were returned. There was an extraordinary variety in the local distribution of the pig stock of the world, and in the course of exports from different countries at different times. He was not referring only to those parts where the pig was almost a diplomatic factor, like the Balkan States, where there was continual friction as between Austria-Hungary and Servia, Bulgaria and Roumania. There acute questions arose as to the relative magnitude of the pig trade and the movement of swine over the frontiers. Even in their own statistics here one must remember all the pigs might not get into the returns, though they tried to supplement the figure got from occupiers of over an acre of land by those kept by small individual pig owners. In any case, pig totals were a wobbly feature of the returns from one year to another. A census taken on one day might be falsified on the next by the arrival of large litters, so rapidly did this form of live stock move. Another consideration forcibly brought out in the Paper was the unstable and in some respects disappointing character of the Australian live-stock figures. Mr. Hooker recognised that the enormous changes from one year to another in this region prevented a feeling of certainty in estimating our future reliance on these flocks. The 87,000,000 sheep, shewn as the stock at the present time in Australia was, no doubt, a recovery from past losses, but it yielded a very insignificant export. Only something like 672,000 cwt. of mutton in a year, as shown in Table IV, came here; and one wanted more explanation about the total export and the microscopic contribution of the large Australian flocks to the available mutton of the world. From New Zealand, with only one quarter of the sheep, we received here about 2,000,000 cwt., or three times the Australian quantity. It was an invidious task to suggest that such a voluminous and illuminating Paper should be in any way further extended; but he would certainly like, in the population and meat-production table, to add the population for the two intermediate years, not only the first year and the last, so as to give the different movements of production in relation to persons between each of the different decades under discussion. He noticed particularly the very ingenious calculations of the hypothetical equivalent in cattle of the total out-turn of all forms of meat. Had time sufficed he would have been glad to have seen its local application more fully discussed; but as it stood they had a rise from about 1880 to 1908 of something like 31 per cent., whereas the increase from first to last in the population seemed about 39, or even 40 per cent. A dissection of this movement in each ten years' interval would be interesting, as the Paper showed the progress was not uniform. He should like those population and production figures to be examined in more detail, both as a whole, in groups, and in the individual countries. We had far too little data yet as to the meat consumed as well as that produced, even in the older States. He felt that more had to be discovered about the significance of the position between 1890 and 1900, and from that date to 1908. Some of the movements had been most remarkable in the last few years. In the case, for instance, of the Russian sheep stock, which was the largest in Europe, the data suggested an exceptional fall in the later period which was not entirely explained. It had not been taking place at the same time as the German falling off, nor did it synchronise with other European movements, and was entirely opposed to the development in the Russian Asiatic flocks. Was it possible with regard to European Russia, where sheep had fallen from 61,000,000 to 46,000,000, that there was some alteration in the areas accounted for or some change in the method of collecting statistics, either in the date at which the return was taken, in the proportion of young stock included, or even, possibly, there might be now an exclusion of those goats which in the earlier figures were included with the sheep? The Paper acknowledged the curious nature of the figures representing the British home supply of meat in the earlier years, which were added to the table submitted to the Departmental Committee on Meat Production. He was bound to say that the figures for 1890-91, showing that only 10,000,000 cwts. of beef were produced, struck him as very remarkable, and he should have liked to go still further back and compare them with earlier estimates, in spite of the doubt Mr. Hooker indicated that perhaps there were changing factors, not now recognisable, which would hinder an absolutely fair comparison. Still there seemed no parallel to that particular year in any other part of the table, and it was always unfortunate for any statistical table to begin with an entirely exceptional year. The Paper as a whole would well repay study, and would doubtless be quoted freely hereafter. Taking the conclusions of Mr. Hooker as to the consumption of meat in this country, he thought it was worth remembering that if, according to the data before them, the consumption was slightly checked in the latest three years, the decline seemed to be almost entirely in the comparatively inferior item of pig-meat. There was none in the total consumption of beef, of which they were eating more per head than at any time before; they were even eating as much home beef as ten years ago, and more foreign. With regard to mutton, the foreign quota consumed per head seemed to remain pretty steady for the long period since 1895; and the consumption of home mutton had hardly declined. In the case of pig-meat, however, there was a very remarkable fall, namely, from 17 lbs. per head to 13 lbs. in the home-grown section, and also some decline in the foreign. He might suggest that the general improvement in the condition of the people was reflected in the consumption of the higher forms of meat rather than the lower, such as pig-meat. He concluded by moving a hearty vote of thanks to Mr. Hooker.

Mr. HOOKER thanked the audience for their kind reception of his paper, and said there was not much original work in it, the actual figures having been mostly prepared for official use by the Department; and any value it might possess was largely due to them. With regard to the decline in the imports of beef from Australia, Mr. Welton would no doubt have noticed that beef from that country lagged behind mutton, but it was true that it had not recovered in the same way as mutton, and Mr. Goodsir had no doubt given the true explanation of this. Mr. Matthews had said that sheep were not pastured in England; this was quite true, and he (Mr. Hooker) had had this country in his mind as the principal exception. But we had so far advanced as to have, so to speak, intensive cultivation, which even extended more or less to sheep; and we had got largely beyond the stage of pasturing. But England was only a small part of the world; and, though other exceptions could also be enumerated, he did not think they invalidated the general broad statement.. Mr. Barclay was quite correct in referring to the decline in ranching in the United States; it was disappearing steadily. With regard to the probable increase in sheep in Patagonia, by far the greater part of that district was included in Argentina; but the last census of the Argentine Republic showed a decrease of several million head. He had little doubt that what had happened was, that a much greater decrease than that shown had occurred in the older settled districts, which had been only partly replaced by an increase on the Patagonian side; and it looked to him as if the increase in the south would be largely counterbalanced by the decrease in the centre and north. South America seemed to have passed its maximum in sheep, though very good mutton prices might cause it to swing round again. He sympathised entirely with Mr. Rew and other speakers as regarded the transit of dead meat instead of live animals. With regard to Mr. Coggan's remarks on American competition in 1883 to 1887, the peculiar part of it was that they were sending in very much less when prices were falling rapidly. No doubt they competed as much as they could, but the decreased imports did not seem very strong evidence of dumping in those years. With regard to the action of the meat trust, he could only refer to the very judicious and judicial Report of the Departmental Committee which had just been issued; and he could not add anything to what was there said. With regard to the Chairman's remarks as to the unreliability of the pig census, he was afraid they knew too much about that. But however unreliable they might be as actual figures, he thought they might be used in making comparisons from period to period. Major Craigie had no doubt observed the remarkable regularity of the oscillations in the pig numbers of this country; you could almost forecast from one year to another what they would be, though he must say that the present year presented unusual difficulties. The sequence of figures indicated that they were near the maximum;

but the decreased imports of pig-meat of late years, and the good prices prevailing, might induce further breeding. But there were many significant signs that last year would be about a maximum for the United Kingdom, which was likely to be followed by a decrease, though, of course, the swing of the pendulum might be delayed.

The CHAIRMAN asked if Mr. Hooker had noticed the difference between the Russian and German movements in pigs?

Mr. HOOKER had referred to the development of the German pig industry as being most remarkable, but he did not know much about Russia. Major Craigie had also referred to the variations in the Australian statistics, but, although the fluctuations were very violent, he would no doubt have observed that they moved in great waves, and that the individual Colonies all moved together. Australia was subject to terrible droughts; and, as had been pointed out, the steadiness of the imports from New Zealand was due to that island being on a totally different footing as to climate; New Zealand did not get those droughts, and could develop steadily.

Mr. GOODSIR said that in Australia only 5 per cent. of the stock were fit to be shipped to this country. The fluctuations were chiefly in the number of merinos, and not so much in the cross-bred sheep.

Mr. HOOKER said that that was largely the point which had led him to look mainly to Australia for our mutton in future. If the price of mutton became sufficiently high, it was quite conceivable that extensive cross-breeding to improve the meat yield of the sheep might be adopted there, and it was because of this present unsuitability of so large a proportion of the sheep that there was so much more room there than anywhere else for development.

The following were elected Fellows of the Society:—

Percy Matthew Hendrie.
Charles Fraser Adair Hore.

REPORT OF THE COUNCIL

For the FINANCIAL YEAR *ended* 31*st December*, 1908, *and for the* SESSIONAL YEAR *ending* 15*th June*, 1909, *presented at the* SEVENTY-FIFTH ANNUAL GENERAL MEETING *of the* ROYAL STATISTICAL SOCIETY, *held at the Society's Rooms*, 9, *Adelphi Terrace, Strand, W.C., London, on the* 15*th of June*, 1909.

THE Council have the honour to submit their Seventy-fifth Annual Report.

The roll of Fellows on the 31st December last as compared with the average of the previous ten years was as follows :—

Particulars.	1908.	Average of the previous Ten Years.
Number of Fellows on 31st December	855	908
Life Fellows included in the above	170	177
Number lost by death, withdrawal, or default	46	53
New Fellows elected	40	50

Since the 1st January last, 26 new Fellows have been elected or added to the list, and the Society has lost 57 by death, resignation, or default, so that the number on the list, excluding Honorary Fellows, on 15th June, 1909, is 824.

The Society has to deplore the death since June last year of the following Honorary Fellows: Dr. von Inama-Sternegg

(Austria-Hungary), Colonel Carroll D. Wright (United States), and Professor T. H. Aschehoug (Norway); also of the undermentioned Fellows:—

Deaths of Fellows since June, 1908.

	Name	Date of Election.
d	*Beardsall, Francis E. M.	1875
d	*Beaufort, William Morris, F.R.A.S.	1875
	*Burton, The Right Hon. Lord	1872
	Czarnikow, Cæsar	1873
d p	Dun, John	1875
	Egerton of Tatton, The Right Hon. Earl	1880
c d p	Fox, Arthur Wilson, C.B.	1900
	Freeman, T. Kyffin, F.G.S.	1887
d	Hamilton, The Right Hon. Sir Edward W., G.C.B.	1887
	*Hancock, Charles, M.A.	1885
c d p	*Hendriks, Frederick, F.I.A.	1855
	Holliday, John, M.A., F.I.A.	1900
	Hooper, Angus W.	1896
c d	*Kennedy, Sir Charles Malcolm, K.C.M.G., C.B.	1884
	*Lines, William E.	1884
	Lloyd, Wilson, J.P., F.R.G.S.	1879
	Parisot, Oscar la Valette	1901
d	*Pickering, John	1871
d	Stanton, Arthur G.	1889
	Strutt, The Hon. Frederick	1880
	Templeton, Col. John Montgomery, C.M.G., V.D., F.I.A.	1906

By the death of Mr. Wilson Fox, C.B., who had been one of the Honorary Secretaries since 1905, the Society sustained a heavy loss and the Civil Service lost one of its most efficient members. The Council was officially represented at the funeral and also at the memorial service held in London, and a vote of condolence with his relatives was passed.

In Mr. Hendriks the Society has lost one of its oldest Fellows, who had served for many years on the Council and had frequently filled the position of Vice-President. A vote of condolence with his relatives was passed by the Council.

In January the Council received with regret the intimation of the death of Mr. J. Whittall, who occupied the position of Assistant Secretary to the Society from 1873 to 1891.

* Life Fellow.

c Ex-Member of the Council.

d Donor to the Library.

p Contributed a Paper to the Society's Transactions.

Since June, 1908, the following new Fellows have been elected:—

Alexander, Charles S.
Askwith, George R., K.C.
Astor, Waldorf.
Beveridge, William H.
Bowers, F. Gatus.
Boyd-Carpenter, Archibald.
Brownlee, John, M.D., D.Sc.
Dickson, Prof. Henry N., M.A., D.Sc., F.R.S.E.
Duffell, James H., A.I.A.
Dungey, Miss M. E.
Ellinger, Barnard.
Ghosh, Devendra Nath, B.A.
Gough, George W., B.A.
Hart, Sir Robert, Bart., G.C.M.G. (*transferred from list of Hon. Fellows on his return from China.*)
Heinicke, Fedor.
Hendrie, Percy M.
Hoffman, Frederick L.
Hore, Charles F. A.
Janisch, Noel.
Kerr, Dr. James, M.A.
Keynes, John M., M.A.
Kirkham-Hogbin, P. J.
Lewis, Hugh.
Lupton, William.
Mann, Joseph.
Morgan, Benjamin H.
Morris, R. Denman.
Neill, Samuel B.
Neill, Thomas.
Pearce, A. James, A.C.A.
Pritchard, Arthur, M.A.
Raghunatha Rao, C. S.
Reade, Hubert Vincent.
Reid, G. T., B.Sc.
Ridley, Viscount.
Sale, Charles V.
Samuel, George A. H.
Schumpeter, Dr. Joseph A.
Smith, William H., F.S.A.A.
Spear, B. E.
Stevenson, Dr. T. H. C.
Streeter, Rev. Theodore.
Thomson, John W., F.F.A., A.I.A.
Walker, James.
Wallis, Percy.
Wolfe, Lee J.
Young, Charles W. F., M.D.

One Honorary Fellow was also elected, M. Gustav Sundbärg.

The financial condition of the Society is shown in the Auditors' report appended hereto. The value of the invested stock held by the Society is taken at current prices. On 1st January, 1908, there was a balance from 1907 of 717*l.* 19*s.* 9*d.*; the receipts of the year were 2,171*l.* 5*s.* 11*d.* (including the Sanford Bequest of 100*l.* referred to in the last report), and the expenditure was 2,427*l.* 19*s.* 11*d.* (including 288*l.* invested), leaving a balance of 461*l.* 5*s.* 9*d.* on 31st December, 1908. Details for the last twenty-five years are given in Appendix B. The cordial thanks of the Council have been tendered to the Auditors for their honorary services in auditing the Treasurer's accounts for the past year.

The contributions to the Society's transactions presented at the Ordinary Meetings of the Session, 1908-09, have been as follows:—

1908.	
I.—17th November	Brabrook, Sir Edward W., C.B. Social Insurances.
II.—15th December	Chapman, Samuel. American Methods of Railway Accounting.
1909.	
III.—19th January	Braun, Percy E., B.Sc. The Cost, Conditions and Results of Hospital Relief in London (Howard Medal Prize Essay).
IV.—16th February	Somerville, Prof. William, D.Sc. Forestry in some of its Economic Aspects.
V.—16th March	Hutchins, Miss B. L. Statistics of Women's Life and Employment.
VI.—27th April	Baldwin-Wiseman, W. R., M.Sc. The Increase in the National Consumption of Water.
VII.—18th May	Hooker, R. H., M.A. The Meat Supply of the United Kingdom.
VIII.—15th June	Paish, George. Great Britain's Capital Investments in Other Lands.

The thanks of the Society are due to those Fellows who have contributed so largely by the reading of papers to the maintenance of public interest in the Society's proceedings.

The average attendance at the Ordinary Meetings has somewhat increased during the past three sessions, though it is still less than might be expected in proportion to the number of Fellows.

The growth of the Society's Library, and the extent to which it is used by Fellows of the Society and others, are shown in Appendix C. The monthly average number of books lent during 1908 was 73, and that of borrowers 40. The total number of Fellows and others using the Library during the year was 1,063, or an average of 88 persons per month.

Part V of the Index to the *Journal*, including the volumes li to lxxi (1888-1908), was completed last April, when copies were issued gratuitously to Fellows.

The Census Committee, appointed in November, 1907, have been actively engaged throughout the past year in the consideration of the schedule and tabulation of the Census of the United Kingdom, and also in framing a general scheme for a Census of the British Empire. Their proposals on these subjects have been approved by the Council and forwarded in due course to the Government. In July, 1908, the reference to the Committee was extended so as to include the consideration of proposals for the improvement of official statistics generally, and additions were made to the Committee in view of this extension. In May the Committee presented a full report to the Council embodying their previous interim reports. This report was adopted and ordered to be forwarded to the Government and also to the Colonial Governments concerned. The Council re-appointed the Committee for the purpose of considering questions which may arise relating either to the Census or to the co-ordination of official statistics.

The Council reiterate their view that the Acts for the Census of 1911 should be in force this year, so that timely arrangements may be made for their administration, and they fully agree with the Committee as to the urgency of the other recommendations put forward.

The Special (Housing and Development) Committee have had under consideration suggestions for increasing the facilities and improving the accommodation offered to Fellows, and for generally extending the usefulness of the Society, by the aid of the funds accruing from the Guy Bequest. No decision has as yet been arrived at by the Council, but the question engages their anxious attention.

Under the conditions laid down in the regulations for the award of the Guy Medal, the Council have awarded a medal in silver to Sir Edward W. Brabrook, C.B., for his paper on Social Insurances read before the Society on the 17th November, 1908, and in consideration of the series of reviews of the Progress of Friendly Societies contributed by him on previous occasions.

The following Fellows (nominated in accordance with Bye-law 14) are recommended for election as President, Council, and Officers of the Society for the Session 1909-10:—

PRESIDENT.

Sir Jervoise Athelstane Baines, C.S.I.

COUNCIL.

William M. Acworth, M.A.
*G. R. Askwith, K.C.
Arthur H. Bailey, F.I.A.
Edward Bond.
Arthur L. Bowley, M.A.
Sir Edward W. Brabrook, C.B.
*W. H. Clark, C.M.G.
Timothy A. Coghlan, I.S.O.
Reginald Dudfield, M.A., M.B.
Sir William C. Dunbar, Bart., C.B.
Professor F. Y. Edgeworth, F.B.A.
Alfred W. Flux, M.A.
Edgar J. Harper.
Noel A. Humphreys, I.S.O.
*A. W. Waterlow King, J.P.
Bernard Mallet.
Theodore Morison, M.A.
Sir Shirley F. Murphy, F.R.C.S.
Francis G. P. Neison, F.I.A.
Arthur Newsholme, M.D.
George Paish.
*L. L. Price, M.A.
R. H. Rew.
*Charles P. Sanger, M.A.
William N. Shaw, D.Sc., F.R.S.
J. D. Stuart Sim.
*Professor William Somerville, D.Sc.
David A. Thomas, M.A., M.P.
Thomas A. Welton, F.C.A.
G. Udny Yule.

Those marked * are proposed as new Members of Council.

TREASURER.

Sir Richard Biddulph Martin, Bart. (*Hon. Vice-President*).

HONORARY SECRETARIES.

R. H. Rew (*and Foreign*). G. Udny Yule. W. H. Clark, C.M.G.

The abstract of receipts and payments, and the estimate of assets and liabilities on 31st December, 1908, together with the report of the Auditors on the accounts for the year 1908, are appended.

Signed on behalf of the Council,

(Signed) CHARLES W. DILKE,
President.

R. H. REW,
G. UDNY YULE, } *Hon. Secretaries.*

J. H. MAGEE,
Assistant Secretary.

APPENDICES TO ANNUAL REPORT.

A (i).—ABSTRACT *of* RECEIPTS *and* PAYMENTS *for the* YEAR *ending* 31*st* DECEMBER, 1908.

RECEIPTS.

				£	s.	d.
Balance in Bank on Deposit, 31st December, 1907	£400	–	–			
Balance in Bank on Current Account, 31st December, 1907	314	13	8			
Balance of Petty Cash Account	2	12	10			
,, Postage Account	–	13	3	717	19	9
Dividends on Consols, 4th Quarter of 1907 (General Funds and Guy Bequest)	76	5	2			
Dividends on Consols, 1st to 3rd Quarters, 1908 (General Funds)	42	4	9			
Do., do. (Guy Bequest)	187	16	–			
Dividend on G.N.R. Stock	38	–	–			
Interest on Deposit at Bank	6	6	9	350	12	8
Annual Subscriptions:—						
44½ Arrears	93	9	–			
574 for 1908	1,205	8	–			
19 in Advance for 1909	39	18	–	1,338	15	–
637½						
Compositions				84	–	–
"Journal" Sales				254	6	3
Advertisements in "Journal"				33	12	–
Sanford Bequest				100	–	–
Library. Sale of Books				10	–	–
Total				£2,889	5	8

PAYMENTS.

				£	s.	d.
Rent and Taxes:—						
Rent	£356	5	–			
Taxes	43	15	11	£400	–	11
Fire, Light, and Water				46	13	4
Furniture and Repairs				28	2	3
Salaries, Wages, and Pension				534	14	–
"Journal," Printing	£517	12	11			
,, Shorthand Reporting	27	6	8			
,, Literary Services	56	18	5	601	18	–
Ordinary Meeting Expenses				15	18	9
Advertising				35	13	3
Postage and delivery of "Journals" and Catalogues				61	11	1
Stationery and Sundry Printing				65	16	6
Library				92	10	11
Incidental Expenses				53	8	9
Medals				43	7	6
				1,979	15	3
Catalogue of Library	£160	8	8			
Sanford Bequest: Purchase of Met. Consol. Stock	100	–	–			
Purchase of Consols (Interest on Guy Bequest)	187	16	–	448	4	8
				2,427	19	11
Balance on Deposit at Bank, 31st December, 1908	£300	–	–			
Balance on Current Account	160	12	7			
Balance of Petty Cash	–	4	2			
,, Postage Account	–	9	–	461	5	9
Total				£2,889	5	8

(Signed)

" CHAS. ATKINSON,
" A. H. BAILEY,
" S. CHAPMAN,
Auditors."

" *2nd February,* 1909.

A (ii).—ESTIMATE *of* ASSETS *and* LIABILITIES *on* 31*st* DECEMBER, 1908.

LIABILITIES.	£	s.	d.	ASSETS.	£	s.	d.	£	s.	d.
Messrs. Harrison and Sons, for December "Journal"	143	3	9	Balance on Deposit at Bank	£300	–	–			
Miscellaneous Accounts	290	11	7	Balance Cash Accounts	161	5	9	461	5	9
19 Subscriptions received in advance	39	18	–	2,371*l.* 6*s.* Consols (General Fund). (Price, 31st December, 1908, 84*l.*)	1,991	17	10			
	473	13	4	10,688*l.* 8*s.* 7*d.* Consols (Guy Bequest)	8,978	5	8			
Balance in favour of the Society (Exclusive of (1) Books in the Library; (2) Journals in Stock; and (3) Pictures, Furniture, and Fixtures)	12,040	8	11	1,000*l.* G.N.R. Preferred Converted Ordinary Stock (Price 31st December, 1908, 95*l.*)	950	–	–	11,920	3	6
				Arrears of Subscriptions recoverable (say 42)				88	4	–
				Sundry debtors				44	9	–
	£12,514	2	3					£12,514	2	3

A (iii).—BUILDING FUND (ESTABLISHED 10*th July*, 1873): STATEMENT *on* 31*st* DECEMBER, 1908.

This Fund is invested in Metropolitan Consolidated 3*l.* 10*s.* per Cent. Stock. On the 31st December, 1907, the Fund was invested in 368*l.* 0*s.* 10*d.* Stock. On the 25th May, 1908, a further purchase of 97*l.* 6*s.* 5*d.* Stock was made with the Sanford Bequest (100*l.*). With the dividends received during 1908, additional Stock to the amount of 13*l.* 11*s.* 1*d.* was purchased by the Bank of England for the Society. Accordingly, on the 31st December, 1908, the total investment amounted to 478*l.* 18*s.* 4*d.* Stock.

(Signed) " CHAS. ATKINSON,
" A. H. BAILEY, *Auditors.*"
" S. CHAPMAN,

" 2*nd February*, 1909.

A (iv).—"REPORT OF THE AUDITORS FOR 1908

"*The Auditors appointed to examine the Treasurer's Accounts for the Year* 1908,

"REPORT:—

"*That they have compared the Entries in the Books with the several Vouchers for the same, from the* 1*st January to the* 31*st December*, 1908, *and find them correct, showing the Receipts (including a Balance of* 717*l.* 19*s.* 9*d. from* 1907) *to have been* 2,889*l.* 5*s.* 8*d., and the Payments* 2,427*l.* 19*s.* 11*d., leaving a Balance in favour of the Society of* 461*l.* 5*s.* 9*d. on the* 31*st December*, 1908.

"*They have also had before them an Estimate of the Assets and Liabilities of the Society at the same date, the former amounting to* 12,514*l.* 2*s.* 3*d., and the latter to* 473*l.* 13*s.* 4*d., leaving an excess of Assets over Liabilities of* 12,040*l.* 8*s.* 11*d., exclusive of* (1) *Books in the Library;* (2) *Journals, &c., in Stock; and* (3) *Pictures, Furniture, and Fixtures.*

"*They have verified the Investments of the Society's General Funds* (2,371*l.* 6*s. Consols* + 1,000*l. G.N.R. Stock); the Guy Bequest* (10,688*l.* 8*s.* 7*d. Consols); and the Building Fund* (478*l.* 18*s.* 4*d. Metropolitan Consolidated Three and a Half per Cent. Stock); and also the Banker's Balance* (461*l.* 5*s.* 9*d.); all of which were examined and found correct.*

"*They further find that at the end of the year* 1907 *the number of Fellows on the list was* 861, *which number was reduced in the course of the year to the extent of* 46, *by Death, Resignation, or Default, or by transference to the list of Honorary Fellows; and that* 40 *new Fellows were elected or restored to the list, leaving on the list on the* 31*st December*, 1908, 855 *Fellows of the Society.*

(Signed) "CHAS. ATKINSON
"A. H. BAILEY,
"S. CHAPMAN,
} *Auditors.*

"2*nd February*, 1909."

B.—*Statement of the Condition of the Society in the last Twenty-five Years* 1884-1908.

Year.	Number of Fellows on 31st December.	Number of Life Fellows included therein.	Losses during Year by Deaths, &c.	Gains by Election, &c., during Year.	Income from					Expenditure.			Amount Invested on 31st December.	Year.
					Annual Subscriptions.	Compositions.	Journal Sales.	Investments and other Sources.	All Sources.	Total.	Of which			
											On Journal.	On Library.		
					£	£	£	£	£	£	£	£	£	
1884....	909	150	57	106	1,447	294	207	1,198	3,146 [b]	3,088 [c]	645	38	2,500	1884
'85....	928	148	55	74	1,462	63	188	349	2,062 [d]	2,070 [c]	625	27	2,500	'85
'86...	943	156	70	85	1,583	231	180	92	2,086	2,106 [e]	735	32	2,500	'86
'87....	977	160	59	93	1,621	126	188	94	2,029	2,135 [f]	609	87	2,500	'87
'88....	1,059	172	58	140	1,686	334	171	101	2,292	2,003	711	58	2,500	'88
'89....	1,060	175	69	70	1,678	126	229	82	2,115	2,060 [g]	623	146	2,500	'89
1890....	1,063	177	65	68	1,764	84	155	94	2,097	2,096 [a]	567	68	2,900	1890
'91....	1,019	172	80	36	1,707	42	146	181	2,076 [h]	1,957 [i]	582	172	2,900	'91
'92....	994	171	70	45	1,634	84	158	104	1,980	1,883 [j]	539	94	2,900	'92
'93....	964	176	66	36	1,560	124	128	92	1,904	1,921	578	63	2,900	'93
'94....	933	180	67	36	1,491	105	152	82	1,830	1,904	649	75	2,900	'94
'95....	928	180	59	54	1,468	63	180	82	1,793	1,823 [k]	576	56	2,900	'95
'96....	910	181	48	30	1,478	42	168	84	1,772	1,787	571	44	2,900	'96
'97....	892	182	58	40	1,472	145	157	83	1,857	1,986 [l]	650	50	2,900	'97
'98...	878	180	57	43	1,451	115	182	105	1,853	1,825	609	55	3,300 [m]	'98
'99....	896	181	44	62	1,432	95	167	127	1,821	1,805	564	33	3,300	'99
1900....	923	179	36	63	1,514	21	189	148	1,872	1,817	521	53	3,300	1900
'01....	926	177	49	52	1,464	63	211	129	1,867	1,823	518	42	3,300	'01
'02....	932	177	52	58	1,504	21	255	152	1,932	1,839	543	73	3,300	'02
'03 ..	939	174	49	56	1,517	84	293	151	2,045	1,875	593	91	3,300	'03
'04....	925	175	58	44	1,407	124	253	152	1,936	1,931 [a]	521	92	3,400	'04
'05....	911	178	59	45	1,465	168	220	220	2,073	2,074 [n]	665	67	11,975 [o]	'05
'06 ...	891	177	63	43	1,464	82	225	408	2,274 [p]	1,988	645	95	11,449	'06
'07....	861	172	63	33	1,363	82	327 [r]	408	2,180	2,401 [q]	571	87	11,746	'07
'08....	855	170	46	40	1,339	84	254	494	2,171 [s]	2,428 [t]	602	92	11,920	'08

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[a] Includes purchase of Government stock.
[b] Includes sale of 1,000*l.* stock.
[c] Includes expense of moving to new premises.
[d] Includes Dr. Guy's legacy of 250*l.* [e] Includes cost of Jubilee Volume.
[g] Includes cost of part iv of Index to *Journal*.
[l] Includes outlay for Guy Medal and for binding the "Times."
[k] Includes cost of Subject-Index to *Journal*.
[m] Includes 400*l.* G.N.R. stock, purchased with Mr. J. Heywood's Legacy of 500*l.*
[o] Includes the Guy Bequest. The total invested is now valued at current prices.
[f] Includes cost of Catalogue and Index, and of Charter.
[h] Includes Mrs. Lovegrove's legacy of 100*l.*
[j] Includes outlay for drainage repairs.
[i] Includes cost of doing up interior of premises.
[n] Includes 100*l.* to International Statistical Congress Fund.
[p] Including 126*l.* for sale of books.
[q] Includes purchase of 600*l.* G.N.R. Stock.
[r] Includes special sales. [s] Includes Sanford Bequest, 100*l.*
[t] Includes 160*l.* for Catalogue and 288*l.* for purchase of Stock.

C.—*Numbers of Books Added to the Library and Lent, and Numbers of Borrowers from the Library in* 1907, 1908, *and part of* 1909.

Months.	Works Received.*			Books Lent.						Borrowers.			Fellows and Visitors using the Library.			Months.
	1907.	1908.	1909.	1907.		1908.		1909.		1907.	1908.	1909.	1907.	1908.	1909.	
				Works.	Vols.	Works.	Vols.	Works.	Vols.							
January	429	520	510	54	68	81	98	68	78	37	42	29	55	81	64	January
February				86	94	74	89	89	106	37	48	54	60	76	95	February
March				57	62	98	125	94	118	36	51	44	80	110	101	March
April	464	512	—	41	55	60	81	91	105	27	38	44	71	77	88	April
May				80	86	76	100	80	104	44	47	51	68	87	109	May
June				68	76	41	51	—	—	37	26	—	91	97	—	June
July	447	440	—	62	74	72	97	—	—	34	36	—	72	90	—	July
August				52	66	58	63	—	—	36	36	—	48	96	—	August
September				37	50	63	80	—	—	22	37	—	53	77	—	September
October	459	482	—	59	70	74	90	—	—	44	41	—	77	98	—	October
November				88	119	99	118	—	—	52	45	—	81	77	—	November
December				71	86	79	90	—	—	41	39	—	62	97	—	December
Year	1,799	1,954	—	755	906	875	1,082	—	—	447	486	—	818	1,063	—	Year
Monthly average	150	163	—	63	75	73	90	—	—	37	40	—	68	88	—	Monthly average

* These figures represent the number of works entered during the year under "Additions to Library" in the *Journal*, and not the number of separate volumes; they are exclusive of about 170 weekly, monthly, and quarterly periodicals regularly received.

PROCEEDINGS *of the* SEVENTY-FIFTH ANNUAL GENERAL MEETING, held on 15th June, 1909.

The Right Hon. SIR CHARLES W. DILKE, Bart., M.P., President, in the Chair.

MR. R. H. REW (Honorary Secretary) having read the notice convening the meeting, the Minutes of the previous Annual Meeting were read and confirmed.

The PRESIDENT announced that under the conditions laid down for the award of the Guy Medal the Council had awarded a medal in silver to Sir Edward Brabrook, C.B., for his paper on "Social Insurances," read before the Society on the 17th November, 1908, and in consideration of the series of reviews of the "Progress of Friendly Societies" contributed by him on previous occasions.

The Report of the Council was read.

The PRESIDENT moved "that the Report of the Council, the Abstract of Receipts and Payments, the Estimate of Assets and Liabilities, and the Report of the Auditors, be adopted, entered on the Minutes, and printed in the *Journal*." They had already, at different meetings of the Council and Committees, expressed their sense of the great loss they had sustained in the death of one of the oldest Fellows of the Society, who had been an office bearer for a great number of years; and in the death of one of the Hon. Secretaries. Of the papers mentioned he might refer specially to the first and last, though all were good. He had already intimated their intention to mark their appreciation of Sir E. Brabrook's admirable paper on Social Insurances, and of his previous papers on Friendly Societies. The last was that to be read to-day, which would be found worthy of the traditions of the Society, and no doubt would lead to an interesting debate. The chief work of the Society had been, on the whole, the preparation of the Census Committee's Report, which they owed largely to Sir Athelstane Baines, who had given a great deal of time and labour to that subject, which he thoroughly understood. Not being a professional statistician, but only a user of statistics, he (Sir Charles Dilke) had not taken any part in drawing up the Report; but he had followed it in all its stages very closely, and to the best of his ability had forwarded, by pressure on all those concerned, the preparation of the next census. By universal admission, it was a thoroughly sound Report and well worthy the history of the Society. The reference to the Census Committee as now extended involved those very questions with regard to which they were good enough to suggest that he should take the Presidency of the Society two years ago; and, in retiring from that position, he was very grateful to Sir A. Baines for having consented to be nominated in his place. He was certain there would thus be continuity of action, to which he was often much opposed in politics, but which in all scientific matters was obviously desirable. The Report dealt with one leading point of the larger question when it recommended that the Census Act should be passed this year, and not hurried through at the last moment as it had been in the past. It was no secret that those officially concerned in the preparation of the census—the political heads of the offices—were anxious that it should be passed; and nothing but general considerations, in which they might be overruled by the Government as a whole, would prevent this being done. Each time they had asked for a positive announcement the matter had been postponed; they had had no negative reply—merely a request to ask again. They had again asked, and they still asked. The matter, which was the subject of his first address as President, had made progress in one way, but not in another. They had not obtained any definite Act by the Government such as they had been pressing for; but they had, he thought, interested or worried a great many persons into some comprehension of what they were at. In one sense there had been great progress, because a certain number of people who never would give their minds to it at all had at all events found themselves vexed or irritated by it. The obstruction was caused by the watertight nature of the Government Departments, each desiring to have its own statistics in its own hands, and to spend its own money in its own way. Each took too departmental a view; and they had not yet procured from any Department, either the Treasury or any other, that general supervision of statistics for which they hoped, and which, on the one hand, would produce economy where there was waste, and, on the other hand, would produce a statistical improvement and the spending of money so as to produce the right result. They still deplored the tendency to publish statistics so late that, if they ever could be useful, they were of no use when they appeared. The statistics of the Department which they censured as being most in arrear were increasingly in arrear; the tendency to be two and a half years late had now, he feared, become a tendency to be three and a half years late. Many of the statistics which concerned England and Wales clashed with the corresponding statistics for Scotland and Ireland and with those of other departments. Names were used in one set which were apparently the same as those used in another set, but did not mean the same thing; and the statistics were thus vitiated. All those defects in the compilation of statistics, which rendered them confusing and often useless to those who had to use them, were carried down, as had been pointed out by Mr. Bowley and others, from a time long before he (the speaker) began to fight (as Sir Athelstane Baines would fight) for improvement. Departments which they had always excepted from censure (not because they were represented in the Society, but because being newer Departments, better and more solidly established, they produced the best statistics) were still producing the best statistics. The Board of Trade had improved, and the new Departments were all good, but some of the old Departments were the great offenders. Until there was some general control over the statistics of the country, he felt that a real improvement was not to be looked for, because the expense, already great, would check that measure of improvement which might be effected by the Departments each working by itself. The Committee of the House of Commons, which had been four times appointed with regard to Government publications, had now been appointed upon the terms that it should consider the wider question to which he had alluded. When the Committee was first started it was only to secure economy; but now it was promised that it should have regard to other considerations. It had already taken some evidence on the subject, and he believed it would take more. Thus, there had been progress in rousing the interest of the Departments; but they had not yet gained the essential point that what they wanted should be done. He had already alluded to the proposed appointment of his successor, and they had already had a suggestion from him as to his successor in the following year in the person of a distinguished statesman. All that, however, was in the clouds; and all they knew was that they had in the President-elect a man who had won the praise of everyone who had seen his work.

Mr. F. W. BARTLETT seconded the motion, which was carried unanimously.

The HONORARY SECRETARY having read out the list of defaulters, the PRESIDENT declared that they had ceased to be Fellows of the Society.

The Ballot was then taken, and the Scrutineers (Messrs. CHARLES ATKINSON and J. H. BUSH) reported that the proposed President, Council, and Honorary Officers for the ensuing session had been unanimously elected.

The HONORARY SECRETARY announced that the subject selected for essays in competition of the Howard Medal in 1910-11, was "A statistical review of the variations during the last twenty years in the consumption of intoxicating drinks, and in convictions for offences connected with intoxication; with a discussion of the causes to which these variations may be ascribed."

Mr. SYDNEY YOUNG proposed a cordial vote of thanks to the President, Council, and Officers of the Society for their services during the past year; and to the President for presiding on the present occasion.

MR. W. R. LAWSON seconded the motion, which was carried unanimously.

The PRESIDENT in returning thanks said he could only express a wish that Sir Athelstane Baines might be more successful in one year than he had been in two years in securing the result they had set their hearts upon, namely, the improvement of Government statistics.

MISCELLANEA.

Frederick Hendriks, F.I.A.

THE Royal Statistical Society has suffered recently sad losses of prominent Fellows, and it is with profound regret they will now miss from their ranks one of their oldest and most valued colleagues, whose presence at the Council Board, at their ordinary meetings, and as the indefatigable treasurer of the Dinner Club, have been long familiar. The late Mr. Frederick Hendriks, who was born in 1827, joined the Society more than half a century ago, entering statistical life under distinguished auspices in 1855, his proposer being Mr. William Newmarch and his seconder Mr. Thomas Tooke, while it is understood he lent valuable assistance to Mr. Newmarch in preparing the two last volumes of Tooke's *History of Prices.* Within a year of his election as a Fellow Mr. Hendriks was promoted to that seat on the Council which he has held almost continuously ever since, serving the Society also as Vice-President in 1875, 1880, 1885, 1889, 1891, 1895, and 1904-06. As one of the Committee of Organisation of the International Statistical Congress in London in 1860, and as delegate to the Congresses at Vienna, in 1857, and at St. Petersburg, in 1872, Mr. Hendriks was identified with the international aspects of statistical investigation, and he thus secured many and distinguished friends and fellow-workers among prominent statisticians abroad, where his work was well known and his advice not infrequently solicited. His correspondence embraced communications with distinguished foreign statesmen and financiers, and he gave important evidence before both the French Enquête Monétaire of 1865-70 and the British Royal Commission of 1868 on the feasibility of international coinage. In 1866, the late Emperor Napoleon, in a letter to M. de Parieu, expressed his thanks to Mr. Hendriks for his work on *Le Monnayage décimal et international,* and among his valued possessions was one of the twelve specimens of the "International Sovereign" (of 5 dollars, 25 frs., or 20s.) which M. de Parieu had sent him. In 1870, Mr. Hendriks received from the King of Sweden the decoration of the Order of Vasa. These recognitions of his writings on international coinage and statistics testified to the position he then occupied. Very fittingly, therefore, he took his place among the original members of the revived International Statistical Institute founded in 1885 on the occasion of the celebration of the Jubilee of the Royal Statistical Society, in the arrangements for which Mr. Hendriks took a useful part. This service he again repeated, to the advantage of his fellow members, in 1905, when, as one of the Society's special committee of reception, and as one of the contributors to the funds which enabled the Society again to welcome the Institute in London, Mr. Hendriks lent most valuable assistance. Attending no less than eight of the sessions of the later Institute in Vienna, Chicago, Berne, St. Petersburg, Buda-Pest, Berlin, London, and Copenhagen, he contributed materially to the reports on fiscal and financial questions then under discussion.

Mr. Hendriks began his long and successful business life, at the early age of 20, as actuary to the Globe Insurance Company, and was more recently actuary and secretary, and finally director, of the Universal Assurance Company. He was a prominent member of the Society of Actuaries, well-known and trusted in the insurance world of London. His writings on the History of Insurance and the Theory of Life Contingencies and on Decimal Coinage may be found in our own Society's collection of tracts, while the pages of the *Assurance Magazine* show other contributions from his pen on matters of actuarial interest. His perseverance and sagacity was especially illustrated by his successful search for the long-lost original of De Wit's *Treatise on Annuities*, written in 1671, and its translation, together with various researches into the history of insurance. In our own *Journal* may be found also numerous papers by Mr. Hendriks. In one of these, read before the Society in 1856, he discussed with much acuteness and full tabular information the financial statistics of British Government life annuities, insisting particularly in the loss sustained in grants of annuities. Only a year later Mr. Hendriks laid before the Society a very elaborate paper, still of value for reference, on the statistics of the British Land Tax Assessment, with what he described as "Notes upon the Political Arithmetic of the earlier period of its settlement." In this, a complete analysis is supplied of the territorial distribution of the tax by counties at different dates, starting from the ship-money levies of 1636, onward to the real quotas of land tax between 1692 and 1798 and to the nominal quotas of 1798 to 1857, with the geographical growth of annual values recorded in the periods 1692-1814 and 1814-51, and over the whole one hundred and fifty-nine years respectively. It is significant of many more recent changes to observe in the concluding column of this table that the amount at which the annual value of real property in England and Wales had reached in 1851 was just 94,809,000*l.*

A paper by Mr. Hendriks in May, 1858, on Indian Revenue and Taxation, supplied a timely contribution of financial importance at a moment when extreme interest attached to stirring events in that great Dependency. His Review of the Statistics of Spain, read in 1860, brought before British statisticians many features of the Spanish census returns of 1857 and 1858. Two years later, Mr. Hendriks' paper of 1862 placed in our *Journal* much detailed information respecting the Vital Statistics of Sweden, while a shorter contribution in 1863 dealt with the progress of official statistics in the Netherlands with a new Dutch life-table, which was offered for comparison with similar data in Sweden and in England.

Outside of the services thus rendered to the Society, Mr. Hendriks played a not inconsiderable part in controversies respecting currency and kindred topics of financial interest, and his letter to the *Economist* of 30th August, 1873, may even now be appealed to as of historical interest in connection with bimetallic discussions, and as explaining the design and effect of the United States Coinage Act of that year in establishing a gold standard. To the younger Fellows of this Society much of Mr. Hendriks' work may not have been familiar, but to the few who remain of the older guardians of its traditions his passing away at the good old age of 82, after a long and active life, leaves a real sense of loss. A memory of his kindly comradeship will be long retained by those who enjoyed his friendship, and the whole Society must sorrow at the rapidly diminishing group of last century's statisticians—which contained such names as those of Newmarch, Guy, and Farr—all colleagues of the subject of this memoir. P.G.C.

NOTES ON ECONOMIC AND STATISTICAL WORKS.

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1.—*Earnings and Hours Inquiry. Report . . . . by the Board of Trade . . . . Earnings and Hours of Labour . . . . of the United Kingdom.* I. *Textile Trades in* 1906. Cd–4545 of 1909. lxxiv + 250 pp. Price 2*s.* 7*d.*

The Labour Department of the Board of Trade is to be sincerely congratulated on the excellence and completeness in many respects of its rather overdue census of wages report on the textile trades. The volume has been pretty extensively commented on in the public press, and the main purport will be already well known to statisticians. Returns were received relating to about 44 per cent. of the persons employed in the group of industries classed under the general heading of "Textile Trades." This is a good proportion for a voluntary census, but there is reason to believe that it would have been even better if the schedules had been issued sooner. The returns relate to the year 1906, and the bulk of the figures—viz., those relating to earnings in an ordinary week—relate to the last week in September of that year. The schedules were not issued until January, 1907, and as it is not the general practice in the textile trades to put the names of operatives in the wages books, many firms otherwise willing were unable to fill their schedules because they could not identify the age and sex of operatives after so long an interval as four months had elapsed. If the schedules had been issued during the third week in September, and the total wages bill had related to twelve months ending 30th September, there is every reason to believe that more returns would have been filled up, while the making of the census year to end at 30th September instead of 31st December would not have mattered much. We hope that in 1916 (we surely are not to wait longer for another census, for even ten years is too long, and we have had to wait twenty for this) this may be done. While statisticians may believe that a "sample" of 44 per cent. is a good one, the man in the street rather doubts it, and reference to the result by either party in a trade dispute is sure to be challenged on the ground of incompleteness by the other party. If a census of wages cannot be appealed to under such circumstances, its utility is considerably lessened.

Altogether, the number of workpeople included in the returns received was 512,598, and the "sample" ranged from 31·3 per cent. in lace to 50·2 per cent. in hosiery.

As this invaluable volume will probably come up for detailed discussion in future numbers of the *Journal*, there is no need to repeat here other than very bare summaries of the results. The following summarises the earnings per head of operatives working *full time* in the last pay week of September, 1906, and the average annual earnings per head in 1906:—

Industry.	Average earnings, full time, in the last pay week of September, 1906.										Average annual earnings per head in 1906.*	
	Men.		Lads and boys.		Women.		Girls.		All workpeople.			
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	£	*s.*
Cotton	29	6	11	6	18	8	10	1	19	7	48	0
Woollen and worsted	26	10	8	10	13	10	8	4	15	9	40	0
Linen	22	4	7	8	10	9	6	7	12	0	29	10
Jute	21	7	10	11	13	5	9	8	14	3	34	10
Silk	25	8	8	2	11	2	6	4	13	2	34	10
Hosiery	31	5	9	5	14	3	7	9	15	11	38	10
Lace	39	6	12	8	13	5	7	1	22	4	54	10
Carpet	26	7	9	1	13	8	7	7	16	7	40	10
Hemp	25	4	8	3	10	11	6	9	14	5	36	0
Small wares	26	6	7	5	11	5	6	2	12	6	29	10
Flock and shoddy	23	9	11	8	12	3	8	9	18	4	46	10
Elastic web	30	3	10	8	11	8	6	6	14	9	37	0
Hair	21	3	7	5	9	4	7	0	12	11	30	10
Other textile	25	8	9	1	13	7	7	0	16	2	39	0
Fustian and cord cutting	24	1	9	8	10	10	8	1	13	8	30	10
Bleaching, printing, &c.	27	8	10	8	12	4	8	2	20	11	54	10
All above industries	28	1	10	5	15	5	8	11	17	6	43	10

* Calculated to the nearest ten shillings.

When the Department comes to make comparisons with the results of the inquiry of 1886, it seems greatly inclined to discount that inquiry. Two comparisons are made, one for adults and the other for all operatives. The comparison for all operatives is made in the following form:—

Industry.	Average Earnings for *full time*.*															
	All males.					All females.					All workpeople.					
	1886.		1906.		Percentage increase.	1886.		1906.		Percentage increase (+) or decrease (−).	1886.		1906.		Percentage increase (+) or decrease (−).
	Per week.		Per week.			Per week.		Per week.			Per week.		Per week.		
	s.	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*	
Cotton	19	4	24	7	27	13	4	16	9	+ 26	15	8	19	11	+ 27
Woollen and worsted	18	7	21	10	17	11	7	12	9	+ 10	14	4	16	2	+ 13
Linen	15	2	17	11	18	8	2	10	2	+ 24	10	1	12	3	+ 21
Jute	14	1	18	2	29	9	1	12	10	+ 41	10	6	14	4	+ 37
Silk †	19	2	21	2	10	9	4	10	9	+ 15	12	8	14	2	+ 12
Hosiery	23	8	26	11	14	13	0	12	7	− 3	17	0	15	11	− 6
All textile industries ‡	18	5	23	1	25	11	7	14	3	+ 23	14	1	17	6	+ 24

* Counting two half-timers as one full-timer.

† Lancashire and Yorkshire, and the Congleton, Leek and Macclesfield Districts.

‡ Except lace, hair, fustian cutting and bleaching, printing, and dyeing, for which industries sufficient details were not obtained for comparison.

Here, it seems, the Department does scant justice to the results of the 1886 inquiry into lace, hair, fustian cutting and bleaching, printing and dyeing. The report states that insufficient details were obtained to enable comparisons to be made, but does not indicate why the 1886 details are insufficient. They were published under the authority of Sir Robert Giffen as representative of these industries at these dates, and we have, as now, the average wages of men, lads and boys, women, and girls. Either the 1886 results are wrong or they are not. If they are, we should be told so; if not, the comparison should be made. One thing is certain, and that is that persons engaged in these industries will make comparisons, and if these are unsafe they should be clearly told why. In the lace trade, lace makers (men) were working half time in one district in 1886, but everybody else seemed to have been working full time, and the error involved by assuming that those working half time would have earned twice as much if working full time is exceedingly small. Surely the comparison should have been made with a warning of its limitations. In the case of the other industries, there seems no sound reason why the comparison should not be made.

The most important results—namely, those relating to the earnings in the last pay week of September, 1906—are given in a form which adds to their usefulness considerably, and indicates that Government departments are somewhat susceptible to the influence of non-official statisticians, though the new methods are followed very cautiously. The following excerpt will indicate the method of stating the results:—

Lancashire and Cheshire—Contd.

Occupation.	Operatives who worked full time.					All workpeople (including those who worked less or more than full time).	
	Number.	Average earnings for full time.	*Lower quartile.*	*Median.*	*Upper quartile.*	Number.	Average earnings of all workpeople.
Women (of and above 18 years of age)—*contd.*		s. d.	s. d.	s. d.	s. d.		s. d.
Doublers { time	590	13 10	*12 6*	*13 6*	*15 6*	604	13 9
Doublers { piece	169	14 9	*13 0*	*15 0*	*16 0*	182	14 3

This statement of the quartiles and medians is undoubtedly a statistical improvement, as we are now able to form some idea of the representative character of the average. The 1886 census was very deficient in this respect. As a general rule the averages lie near the medians, so that we may use them with the confidence that no abnormal group upsets them. The inclusion of "all workpeople" enables us to estimate the amount of short, or over, time worked in a week of a fairly busy year.

So far, so good. But persons engaged in administration in the industries covered by the returns, as well as students engaged in tracing the history of wages in particular trades, will look with dismay upon the large proportion given of "other men," "other women," "other boys," and "other girls." For example, out of 28,611 girls employed and working full time in the cotton industry in Lancashire and Cheshire, 3,222 are half timers of no stated occupation, 11,795 are classed as "other girls," time, and 1,305 as "other girls," piece. What are they all doing? The half timers do not matter so much, but whole groups of weavers' "tenters," ring spinners' doffers, roving frame doffers, &c., have been ruthlessly swept into one hotch-potch. If girls earned the same wages, whether employed in either of these three (or other) occupations, it would not matter. But a "girl" ring-frame doffer does not earn as much as a "girl" ring-frame spinner, and there are girls (meaning females under 18 years of age) employed in each of these occupations. This squeezing up of the returns runs right through the report, and makes many useful and interesting comparisons with the 1886 report and other statements absolutely impossible. Such curtailing of necessary details is, to say the least, unfortunate.

In the woollen and worsted industry the effect is even worse than in the cotton industry. For example, out of 1,460 lads and boys (meaning males under 20 years, many earning a man's wages) returned as employed and working full time in the Huddersfield district, 770 are classed as "other lads and boys" on time work, and 159 as "other lads and boys" on piece work. Here are 929 out of 1,460 "lads and boys" whose occupations we do not know. We only know the wages of lads and boys employed as worsted spinners or wool spinners' piecers, 506 in all. Now boys are employed in the processes preparatory for weaving, in the milling, dyeing, and finishing processes, and in the warehouse. Many of them are warpers, beamers, healders, or have some occupation at which they are competent operatives before reaching 20 years, but the census shows us none of these. Similarly in the worsted industry. What are the wages of "lads and boys" or "girls" employed as jobbers and doffers? and what number are employed in these two definite and distinctive occupations? Are more employed in proportion to the number of spinners they "doff" for, or less, since 1886? One useful test of the possible variation in the efficiency of person and machine is gone by this heterogeneous "classification." Surely, if we could have been told the average wage of 17 girls employed in Bradford as burlers and knotters on piece work, we could have been told what the 264 "other girls" were doing, and what the 1,774 half timers were employed as.

The report, as a whole, is excellent, and reflects great credit on the Labour Department, on the one hand, for the clearness of the details given, and the employers (or, rather, their clerks), on the other, for their public spirit in filling up a return which involved great labour wherever the number employed rose above a handful, and which came to many of them when the annual balance sheets and audits were in hand. We know more about earnings and hours in the textile trades than we ever did before, but there is a considerable quantity of information about subsidiary occupations which we ought to have had and have not got. G.H.W.

2.—*Statistical memoranda and charts prepared in the Local Government Board relating to public health and social conditions.* Presented to both Houses of Parliament by command of His Majesty. 109 + iv pp., folio. London: H.M. Stationery Office, 1909. [Cd-4671.] Price 5s.

The design of the Right Hon. John Burns, President of the Local Government Board, in giving instructions for the preparation of this blue-book, is stated to have been "to illustrate in a convenient and readily intelligible form various matters of importance in the study of existing social conditions, such as the growth of population, mortality, and public health administration, the changes in the occupation of the people, the recurring periods of industrial prosperity and depression, pauperism and the action of the poor law, local taxation and local debt, and the development of education and of thrift." The materials for this compilation are scattered over an enormous number of parliamentary and other returns, which no individual could well master for himself, and it must have cost much labour to bring them together in the succinct and striking form they here present.

The subjects reviewed are dealt with in six sections. The first relates to population, and is illustrated by 6 charts, showing the steady growth of the population in England, Wales, and Scotland, and its equally steady diminution in Ireland (though there the rate of diminution has become less in recent years than it was) since 1851; the birth-rates in those countries, where there is a marked diminution since the seventies, though less marked in Ireland than elsewhere; a comparison of the birth-rate with that of foreign countries, where the curves show a remarkable similarity; the marriage-rate in England and Wales, and in London, showing a striking diminution in the number of women married under 21 years of age; the distribution of population between urban and rural districts, showing that all the growth of population has been absorbed by the former, especially by London and the great towns, while the rural population has diminished in fifty-seven years by nearly 5 per cent.

Section 2, relating to public health, is illustrated by 17 charts, showing the death-rates at various ages and from various causes, and in poor law and similar institutions, the proportions of the population living in various classes of houses and the extent of overcrowding.

Section 3 illustrates occupations, wages, and unemployment, and contains 9 charts, showing the occupied population during the period of working life, the changes in certain groups of occupations during the last half century, the rates of agricultural wages and the number of agricultural labourers, the general level of wages and of prices, the extent of unemployment, and the result of the measures recently adopted for its relief.

Section 4 deals with the poor law and pauperism. It is illustrated by 2 maps, showing the distribution of pauperism in England and in greater London, and by 10 charts, which, so far as they carry the eye over the whole period of fifty years, show a steady diminution until recent years in the number of paupers and a steady increase throughout in the relative cost of poor relief. To this is added a useful chronological table of the principal statutes, orders, and circulars, and other matters affecting the poor law and pauperism since 1834.

Section 5 relates to local government and local taxation, and has 7 charts, classifying the local rates and the local indebtedness.

Section 6, though headed "miscellaneous statistics," may well be looked upon as in some respects the most interesting as well as the most satisfactory portion of the whole work. It illustrates by 6 charts the increase in education, the decrease in illiteracy, the great growth in friendly society membership and funds, the development of trade unions, the increase in savings bank deposits, the increase of wealth measured by income-tax returns, and the diminution of crime shown by the statistics of the United Kingdom during the last fifty years. Under all these heads, the statist, who is defined by Milton to be a "lover of his country," may find sources of gratification. Mr. Burns and his able assistants, Mr. Davy, Dr. Newsholme, and Mr. Hore, deserve the thanks of the public for this graphic and telling presentment of facts in which we are all so deeply interested. E.B.

3.—*Statistik des Deutschen Reichs.* Band 202. *Berufs- und Betriebszählung vom* 12 *Juni* 1907. *Berufsstatistik.* Abteilung I, Heft 1. 240* + 134 pp. Berlin, 1909.

On the 12th June, 1907, an industrial census was taken in Germany, with the dual object of ascertaining (*a*) the distribution of the population according to the trade or occupation actually followed by each person, and (*b*) the number of agricultural and industrial undertakings or concerns, classified according to size and industry. In the volume under notice are given specimens of the census schedules used, with full instructions and explanations, and also the first part of the results of the census.

It is interesting to note that on the schedule issued to householders, the authorities considered it necessary or desirable to state that the particulars asked for were not for taxation, but only for statistical purposes. On this schedule information had to be given concerning not only the occupations of the people and their position therein—whether manager, owner, employee, &c.—but also the date and place of birth, civil position (whether married, single, widowed or divorced), religious persuasion, and insurance in connection with the Imperial Invalidity and Accident Insurance Schemes. Besides the household schedule, special forms were issued for small industrial undertakings of not more than three persons all told, and not using mechanical power; for industrial undertakings employing four or more persons, and using mechanical power (the nature of which had to be specified); and for farmers and others engaged on the land, who were required to state the size of their holdings, uses to which put, numbers of stock, machinery used, &c.

The number of different occupations enumerated ran into many thousands, but for tabulation purposes these have been reduced to

218 headings, arranged in 26 groups, and these again in 6 divisions. Of the actual results of the census, this volume contains only the classification of the population according to the kind, group, and division of occupations, and distinguishing the actual workers or breadwinners (by sex) from their dependents. This classification is based on the main occupation of each person (*Hauptberuf*) defined as that on which principally depends his social position, and in which is obtained the whole or the greater part of his earnings. In addition are given the numbers of persons engaged in supplementary or subsidiary occupations (*Nebenberufe*) for the purpose of supplementing the main source of earnings, a person being counted once for every such occupation followed by him up to a maximum of four.

A general comparison of the numbers engaged in, and dependent on, the various occupations (*Hauptberufe*), together with the numbers of unoccupied, at the census of 1907 and the previous census of 1895, may be given as follows:—

Principal groups of occupations (*Hauptberufe*).	1895.*		1907.	
	Total supported by occupations in column 1.	Actual workers (or breadwinners) only.	Total supported by occupations in column 1.	Actual workers only.
Agriculture, forestry, &c.	18,070,000	8,160,000	17,240,000	9,730,000
Mining, smelting, quarrying, &c.	3,160,000	1,070,000	4,780,000	1,680,000
Working in metals	2,150,000	860,000	2,830,000	1,190,000
Machine and instrument making, &c.	1,040,000	380,000	2,240,000	900,000
Textiles	1,900,000	950,000	1,940,000	1,060,000
Clothing and cleaning	2,970,000	1,510,000	3,100,000	1,690,000
Woodworking, &c.	1,690,000	650,000	1,990,000	790,000
Building, &c.	3,710,000	1,350,000	4,860,000	1,900,000
Commercial	2,940,000	1,210,000	3,720,000	1,740,000
Transport, &c.	2,000,000	620,000	3,160,000	1,030,000
Food catering, hotels, &c.	3,030,000	1,370,000	3,760,000	1,780,000
Military and civil service, and professions	2,840,000	1,430,000	3,410,000	1,740,000
Others	2,940,000	1,210,000	3,510,000	1,600,000
Unoccupied and unspecified	3,330,000	2,140,000	5,180,000	3,400,000
Total	51,770,000	22,910,000	61,720,000	30,230,000

* Figures for 1895 are taken from the German *Handbuch*, 1907.

Considering that between the dates of the two censuses the total population increased from 52 to 62 millions, or nearly 20 per cent., it is noteworthy that the numbers dependent for their maintenance primarily on agricultural occupations slightly diminished, although the numbers actually engaged in agriculture as their main occupation increased in about the same proportion as the general population, namely 20 per cent. Considerable increases occurred in the mining and smelting, machine and instrument making and building industries, while in most of the other groups both the total numbers dependent on them, and the actual numbers engaged in them, increased as fast as the population. Apart from agriculture, only the textiles and the clothing and cleaning industries appear to show relatively small increases in numbers. A.D.W.

4.—*Austria-Hungary. Veränderungen im Stande der Gewerbe während der sieben Jahresperioden* 1900-01 *bis* 1906-07. viii + 52 pp. Wien: Alfred Hölder, 1909.

The record of changes in industry in Austria, contained in this publication, is based on the registers of Chambers of Commerce and Industry, and covers the seven years 1900-01 to 1906-07. A short introduction is given, followed by a series of five tables. The foreign reader will find this introduction lacking in adequate definition and explanation of its subject-matter, to obtain which in greater fulness one must apparently consult the published results of the Austrian industrial census of June, 1897, and a similar work to the present one, issued in 1903. The figures now given appear to represent the annual increase and decrease in the number of trading and industrial concerns within the sphere of the several Chambers of Commerce. They do not cover the whole country, since four Chambers did not report at all in any year; neither are they strictly comparable from year to year, as a few Chambers which reported in some years did not do so in others. In relation, however, to the number of Chambers which made returns in every year, these deficiencies are considered to be too small to vitiate the results.

Having regard only to those figures furnished by the Chambers which reported throughout the whole period, there appear to have been, on the average, an increase of about 84,600 fresh concerns, and a falling-off of about 66,600 in the existing concerns per year. The increases exhibit a regular rise and fall over the seven years, reaching a maximum in 1903-04. The decreases, on the other hand, fluctuate irregularly. The majority of the recorded changes took place in Bohemia and Lower Austria. The particular utility of these and other results is not stated, but their main value would seem to be in the index they afford of the general condition of industry from year to year. A.D.W.

5.—*Le chômage et la profession. Contribution à l'étude statistique du chômage et de son coefficient professionel.* Par Max Lazard, Master of Arts (Columbia University), Docteur en droit. 379 pp. and 5 charts. Paris: Félix Alcan et Guillaumin. 1909. 7.50 frs.

M. Max Lazard is one of the organizers of an international conference on unemployment, for which the initial steps are now being taken in Paris, and he writes with the enthusiasm of a specialist. His achieved purpose in this book is a limited one, for it is not (in spite of its bulk) a general treatise on the causes and extent of unemployment, but a definite inquiry as to whether there is a numerical relation, or "coefficient," between employment and occupation. Only four collections of statistics satisfy the rigid definitions which he properly lays down to ensure completeness and comparability: these are the censuses of March 1896 and 1901 in France, and in Germany of June and December, 1895. The definitions and categories of occupations are very carefully collated for these four, and 102 distinct groups are set out for comparison.

The results are remarkable; though there is so little in common in the dates or methods of the inquiries, a very marked agreement is found between the levels of unemployment in the same occupations in the four groups. The resemblance, as the author measures it, is greatest between the two French inquiries; very marked between the German June inquiry and the French, and between the two German inquiries; less marked, but still distinct, between the German winter and the two French inquiries. The main proposition of the book that occupation is a dominating factor in the severity of unemployment may be held to be established.

The author's method of measurement is peculiar, and not readily intelligible, nor is his defence of it adequate. It consists in writing in one column the lower of the two percentages which occur for the same occupation in the two lists compared, and in another column the higher, and comparing the sums of the columns. Thus if R_1 and r_1 are the percentages shown for group 1 in the two French censuses, R_2, r_2, R_3, r_3 . . . similar percentages for other groups, then a fraction is formed whose numerator is the sum of R_1, R_2, r_3, R_4, r_5 . . ., the capital or small letter being chosen according as the earlier or the later period showed the smaller figure, while the denominator is the sum of the remaining letters r_1, r_2, R_3, r_4, R_5 . . . Whenever an R approaches an r, this fraction becomes more nearly unity. This measurement is on no intelligible scale, and it is not possible to visualize its connection with the correlation to be observed.

The rejection of what the author calls the classical coefficient of correlation is not from ignorance, but after an interesting examination of its claims. The amount of numerical work necessary for its computation cannot be seriously put forward as an objection by so industrious a student as M. Lazard; nor can his numerical criticism, based only on five numbers, be held to be important. There remain the statements (1) that the normal curve of error applies only to a homogeneous group (with the interesting remark that its occurrence or non-occurrence is a test of homogeneity), and (2) that the product-sum coefficient applies only to groups whose frequency is normal. That this latter statement is not true has been shown by Professor Edgeworth, Mr. Yule and Mr. Bowley; the former in his treatment of the *general law of error*, the second in his Paper in this *Journal* in 1897, while the last named in his *Lectures on Groups and Series* shows that (without the assumption of the method of least squares) the product-sum formula is the most probable measurement for quantities, whose *averages* have normal frequency, or (what is the same thing) quantities which are the result of numerous small random combinations. M. Lazard's percentages come under these postulates, and it is a misfortune that he did not calculate the ordinary coefficient, in addition to his somewhat fantastic measurement.

That complete results cannot be obtained from inquiries applying only to four separate instants of time is obvious, and the author would be the first to admit it; but the interest of the investigation brings forward the pressing problem as to whether a question on unemployment should not be included in every population census. In the suggestions of the Census Committee, recently presented to the Council of this Society, it is advocated as part of a complete scheme of questions; and in the recent book on *Unemployment in Manchester*, by Professor Chapman and Mr. Hallsworth (p. 70), a general inquiry, as the census alone can afford, as to the actual number not at work (from whatever cause) at one fixed time, is shown to be necessary before the various existing indices of unemployment can be used for the calculation of "the absolute unemployment for any one year." Given a universal inquiry, the rest is a matter of interpretation; without it, it is guess-work.

A.L.B.

6.—*Unemployment: the Results of an Investigation made in Lancashire* by S. J. Chapman, M.A., M. Com., and H. M. Hallsworth, B.Sc. (Manch.) 164 pp., 8vo. Manchester: University Press, 1909. [Publications of the University of Manchester: Economic Series, No. xii.]

This brochure contains—besides a reprint, with amplifications, of articles which have appeared in the *Manchester Guardian*—an examination of the Report of the Poor Law Commission on Unemployment. The authors point out, as we have already done in this *Journal*, that, as regards the problem of unemployment, the divergences between the majority and minority reports of that Commission are not fundamental. As to the evil of casual labour both reports agree. Both condemn relief works. Both propose a system of national labour exchanges and training establishments. Both approve insurance against unemployment, upon a voluntary basis. Both desire that public authorities should, as far as practicable, adjust their undertakings to the circumstances of the seasonal and cyclical trades.

One of the joint authors of this book, Mr. Chapman, is professor of political economy and dean of the faculty of commerce in the University of Manchester, and author of the first publication in that University's economic series, on the Lancashire cotton industry, reviewed in this *Journal* for 1905 (lxviii, 404). His opinion on the recommendations of the Commission, therefore, has all the weight that a long and enlightened study of the problems of industry can give it. He and his co-author, Mr. Hallsworth, are not clear that the new public assistance authorities are intended to find for the unemployed the right kind of work in the right way. The work must be real work of appreciable value. The wage must be low, the supervision effective, and the employment continuous. Impressed with the difficulty of meeting these requirements, the Commissioners recommend that the reforms they propose should be, for a strictly limited period, safeguarded by some kind of reserve power or safety valve, to consist in the power to institute local works of a semi-remunerative character. The authors agree with Dr. Loch and other members of the Commission that there is great danger of these transitional measures becoming continuous.

The special investigation which the authors have made in Lancashire shows how very difficult it is to obtain precise information upon a question of so much complexity. They say that they themselves do not see quite eye to eye in social questions, yet they have been able to agree upon their conclusions: these are, that where unemployment is not to be accounted for by personal inefficiency, and where the social forces that act independently of State interference are dilatory in their operation, it may be necessary, or at least desirable, to assist nature by administering a State remedy. The evil of casual labour can largely be removed by labour exchanges; but insurance is the chief means of mitigating the distress due to unemployment. For many years, at least, in their opinion, encouragement of insurance may be essential. Another means they recommend is the spreading of unemployment over all in the trade, so that all get a little less work and a little less pay, and none get no work and no pay. Much development in this direction, they think, cannot be expected under present conditions. "Character and efficiency hang together. There can be no doubt but [*sic*] that improved and extended education, and its closer adaptation to the needs of the scholars, would be productive of a marked reduction in the numbers of those unfortunate people thronging the streets to-day, who are only just fit for employment —and perhaps not for regular employment—when business is brisk, and of those who are so unimaginative and unadaptable that they struggle for the bare pittance which can be extracted from a sinking demand for their particular kind of skill." E.B.

7.—*Insurance against Unemployment.* By David F. Schloss. 132 pp., 12mo. London: P. S. King and Son, 1909.

Mr. Schloss defines insurance against unemployment as "an arrangement that, by means of premiums contributed by the insurers while they are in work, there is accumulated a fund, out of which they have the right, in case of their becoming out of work, to receive allowances on a fixed scale." A practice has of late years been adopted in many countries of Europe, but not as yet in the United Kingdom, of supplementing the contributions by subventions granted out of public moneys. Mr. Schloss was called upon some years ago by the Board of Trade to inquire into the various schemes for this purpose which have been proposed in those countries, and his official report, issued in 1904 (Cd–2304), has been justly described in this *Journal* (lxviii, 404) as "full of matter of the greatest interest and value," and "an excellent example of the admirable work which the Board of Trade can do." The practice referred to has, however, been much extended since 1904, and the present volume brings our knowledge of it up to date. The author is justified in thinking that his "short, practical handbook" will be of great service in the discussion of any proposals that may be made for the adoption in this country of some measure of publicly-assisted assurance against unemployment. He does not offer any opinion of his own as to whether such a measure would be desirable or practicable, but he renders the public all the assistance towards determining that question that can be derived from a clear statement of the practice of foreign countries, and an authentic translation of the statutes and regulations applicable to certain typical schemes; those selected by him for the purpose being the unemployment insurance schemes adopted by the municipalities of Berne and Strassburg, and the legislatures of Norway and Denmark. The two former schemes are local in their character. It is, therefore, rather on the lines of the two latter, which are national, that a scheme for this country should be framed, if it should be determined that it is desirable for the State to supplement the contributions for such insurance. In other words, Mr. Schloss is of opinion that the combinations of workmen for the purpose of insuring themselves against unemployment, which would in that event have to be assisted by subventions from the State, should not be organised in particular localities, but for particular trades, or for such groups of allied trades as are capable of working together for that purpose. He points out that the existing trade unions, which now grant out-of-work benefit, are organised upon a national scale; for example, the Amalgamated Society of Engineers has more than 600 branches spread all over the Kingdom. Indeed, it has branches in other parts of the Empire and in the United States; but these, of course, would be left out of account. The reason that exists for dealing with trades separately is an equally strong one, viz., that the risk of unemployment is different in different trades, and to group them together and charge them the same contributions would be to drive away the better risks by overcharging them.

Mr. Schloss also shows that the successful operation of any such scheme is greatly facilitated, if a very close connection is maintained between the insurance funds and some systematic agencies for securing employment in the nature of a labour registry. These registries also should, we presume, be established on a national basis, so as to contribute as much as possible to the mobility of labour.

The author has earned our thanks by a very convenient, instructive, and timely piece of work. E.B.

8.—*L'assurance contre le chômage.* Par Maurice Bellom, ingénieur en chef au corps des mines, professeur d'économie industrielle à l'école nationale supérieure des mines. [Extrait de la *Revue d'économie politique.*] 61 pp., 8vo. Paris: Sirey, 1908.

This reprint contains a bibliography of the works which have appeared on the subject in several countries of Europe. The author discusses the principles upon which, in his opinion, unemployment assurance should proceed, and states the grounds for his conclusions, which are:—

1. That the unemployment to be assured against is not voluntary unemployment but justified unemployment that is to say, that which is not caused by the fault of the workman; and

that the criterion of fault ought to be substituted for that of voluntaryness as characteristic of the risk to be assured.

2. That assurance against justified unemployment is practicable.

3. That assurance against justified unemployment is the basis of workmen's assurance.

4. That assurance against justified unemployment ought to be optional.

5. That the organisations for assurance against justified unemployment might be, according to circumstances, limited to one profession or inter-professional.

6. That the organisations for assurance against justified unemployment ought to contract reassurances either with the workmen's mutual societies or with joint stock companies charging fixed premiums.

7. That the unemployment to be assured against is collective and prolonged unemployment as well as individual and temporary unemployment, periodical and foreseen unemployment as well as irregular and unexpected unemployment.

8. That official subventions to the funds for unemployment are only allowable at the beginning of the operations of those funds and in the form of a payment made once for all.

9. That the employer can only contribute to assurance against justified unemployment at the beginning of the operations of the assurance funds and in the form of a payment made once for all.

It will be observed that every one of these conclusions conflicts with the views on this difficult subject expressed by other writers. The author claims for his proposals that they are neither inspired by generous utopias disregarding practical contingencies, nor by excessive rigour in regard to the working class. They have for object, neither to construct an ideal edifice upon a plan so complete and so complicated that it would be impossible to carry it into effect, nor to require from the underpaid workman a sacrifice in excess of his resources; but to trace a rational programme the methodical character of which would make it easy of realisation and to remind individuals freely associated that they can and ought to become the artisans of their own well-being.

We fear that M. Bellom's plan would not satisfy the real conditions of the problem. The enquiry into justification would present great difficulty. The extension of the assurance to voluntary unemployment would embarrass the calculations of premium. The refusal to allow annual subsidies from the State or from the employer is quite in accordance with sound principle, but not with the practice of the existing funds nor with the expectations of those who are now agitating the question. All the more interest attaches, therefore, to the arguments by which M. Bellom supports his proposals. E.B.

9.—*Le commerce et les commerçants.* By Yves Guyot. (*Encyclopédie Scientifique.*) xvi + 535 pp. Paris: Doin et Fils, 1909.

A text-book of commerce is by no means the same thing as an elementary treatise on economics. True, it must contain something of the theory of exchange and of markets, and perhaps an outline of distribution; but its greater part will be devoted to an historical account of the development of commercial intercourse, and the relation of this development to the earth's physical features; to a description of modern commercial organisation and practice, with glances at banking and at commercial law and morality. The theory of international values, and of the balance of trade, must be included; and also some examination of foreign trade statistics, and of tariff systems. Not all these subjects can be adequately treated in a small volume; and as M. Yves Guyot has attempted to include them all, together with chapters on subjects so far apart as commercial education, State interference, and the custom of a weekly day of rest, it is not surprising that the book is open to criticism as being somewhat sketchy and unfinished. The reader has just settled down to enjoyment of an original, suggestive, and even entertaining discussion, when a single paragraph will bring the chapter abruptly to a close. Nevertheless the book may have much value in stimulating readers to further interest and inquiry in the subjects with which it deals; and for this purpose the very fair number of references and brief bibliography will be useful.

In some directions the author strikes out entirely new lines. Particularly noteworthy are the chapters on the principles of advertising and on the study of consumers' wants, both actual and latent. Of especial use to the English reader, however, will be the latter part of the book, dealing in a very practical manner with the statistics of foreign trade, more particularly those of France. We are told in the clearest manner in what publications the desired information may be found, and the author exercises his critical faculty to great advantage. For instance, Book VII is devoted to "Customs Statistics," and in Chapter V the author gives us an example of the contradictions which are not infrequently found between the figures relating to foreign trade published by different countries. He compares the French and Belgian figures for 1903, and gives the following table and explanation :—

	French figures.		Belgian figures.	
	Quantities in thousands of tons.	Value in thousands of francs.	Quantities in thousands of tons.	Value in thousands of francs.
General trade—				
Imports to France	7,410	358,000	7,445	643,589
Exports from France	2,730	647,000	3,137	814,566
Special trade—				
Imports to France	—	299,180	6,773	393,074
Exports from France ...	—	566,166	2,496	412,302

"A comparison of these figures shows us that, whilst Belgium values at more than 393 millions her merchandise of special commerce sent to France, the French customs only recognise the Belgian origin of goods worth 299 millions: that is to say, there is a difference of 94 millions, or of 23 per cent. less. For the exports of France to Belgium we find that the French figures are 566 millions, whilst the Belgian figures stand at only 412 millions—that is to say 154 millions, or 27 per cent. less.

"The excess arises in both cases on the side of the exporting country; and this is proof that certain goods sent from France to Belgium, and from Belgium to France, under the title of special trade, are in reality only in transit. This explanation is confirmed by the totals of the exports from France and Belgium:—

	French figures.		Belgian figures.	
	Millions of francs.		Millions of francs.	
General trade	647	1,213	814·5	1,226·8
Special trade	566		412·3	

"The totals are very nearly the same, only the French customs have regarded as coming under the head of special commerce 154 millions which the Belgian authorities have counted as general. But if we take the same totals for the exports from Belgium to France, we find the following:—

	Belgian figures.		French figures.	
	Millions of francs.		Millions of francs.	
General trade	643·5	1,036·5	358	657
Special trade	393·0		299	

"Here we have a difference of 379 millions, or 36 per cent., between the two valuations."

There follow chapters on the general and special commerce of France, illustrated by columnar diagrams. Then comes a useful little chapter on some misleading entries in the statement of special trade: of confusions regarding the trade of colonies and protectorates, and of the factitious increase of exports in French ships by the inclusion of bunker coal and provisions for the crews which, as the author points out, are largely provided by State subventions. There is a lengthy discussion of French exports, and an account of the French tariff and its effects on imports. The author misses no opportunity of pointing a moral in favour of free trade.

In conclusion, here is a quotation, taken almost at random, as an example of the author's pleasant and vigorous style. It is the opening of a chapter of one and a quarter pages in length on the "Efforts of Interested Parties" (L'effort de l'Interessé): "One thing there is which nothing can replace: the direct effort of the person interested. Are French producers and merchants doing all that they might? In 1905, we imported 21,500,000 kilos. of eggs, whilst we exported only 8,130,000. In 1907, we imported 24,000,000 kilos., and exported but 5,580,000. Have our hens become Malthusians?" (Here follow statistics for the United Kingdom showing an increase of total imports of eggs, but decline of imports from France.) "Why cannot our rearers of poultry produce enough for the home market? Why do they allow themselves to be ousted from the English market? . . . . Instead of doing his best to lose his business to others, each producer ought to have the maximum of agents having the maximum of interest in distributing his wares." H.S.J.

10.—*The trade and industry of Australasia.* By Ben. H. Morgan. xv + 250 pp., 8vo. London: Eyre and Spottiswoode, 1909.

The author was sent by the Manufacturers' Association of Great Britain to make a tour in Australia and New Zealand as their special trade commissioner; and he has prepared this report on the state of, and openings for, trade, and on the condition of local industries. The objects of the Association were to discover "the extent and possibilities of the market, with a view to increasing export trade, and establishing branch factories inside the tariffs," to ascertain the nature and importance of foreign competition and to study the transport services, with special reference to shipping "rings" and "conferences."

These objects have been achieved by Mr. Morgan; and the result is an interesting and readable book which ought to be of great interest and service to English exporters and manufacturers. The elementary character of much of the information, however, is rather a lamentable comment on the intelligence of our business men. One would think that every foreign trader would know how to make good use of maps, and that there would be no need to give him such information as that "Melbourne is the most suitable centre from which to work South Australia, Victoria, New South Wales, and Tasmania," and that Sydney is the most convenient port for working the three eastern States, New Zealand, and the Pacific Islands.

There are some useful remarks on the unsatisfactory manner in which English goods are packed, and many observations as to the requirements of the population in different parts of Australia. There are many tables reproducing official figures, but no novel statistics of scientific interest. The embellishment of the volume with very numerous and well-executed reproductions of photographs, embracing railways, harbours, and industries, gives considerable general interest to the book. H.S.J.

11.—*Impôts Directs et Indirects sur le Revenu.* Par Jules Ingenbleek. viii + 520 pp., 8vo. Bruxelles: Misch et Thron, 1908.

This painstaking and judicial volume should not merely serve the useful purpose of supplying English students with a searching and authoritative account of the past and present methods and results of the fiscal machinery set in operation in Belgium for taxing income; but it also throws opportunely a suggestive sidelight on changes introduced or contemplated in the assessment and collection of our own variety of income-tax. The book may indeed be said to "point a moral" which might be described appropriately as "double-edged."

On the one hand, it is certainly instructive to find an investigator of the acute perception and the sober judgment of the author of this treatise emphasising as the most conspicuous, and ineradicable, defect of the existing English system the possibility of large evasion; and Dr. Ingenbleek, it is evident, considers that the differentiation recently established between "earned" and "unearned" incomes must be regarded more as an experiment dictated by the imperative immediate influence of political forces attaining a momentum, hitherto unparalleled, at the last general election, than as likely by its consequences to show that we can overcome successfully difficulties which a whole series of famous finance ministers of the standing and capacity, for instance, of Mr. Gladstone, were convinced would offer an insuperable obstacle to the removal of those plain defects which, as they considered, rendered the income-tax a fiscal "pis aller" rather than a satisfactory and equitable mode of permanently raising revenue. From his general attitude we may surmise with confidence what Dr. Ingenbleek, were he consulted, would have to say about some of the novel provisions of the Finance Bill of 1909.

The examination, which he makes in the third chapter of the second section of his work, of the English income-tax is evidently the outcome of much careful and intelligent study, and it will convey, we think, the valuable information to be derived from the different aspect which English institutions must present when viewed by competent foreign eyes. Under-valuation, we are told, is systematic; but nevertheless the jealousy of officialism, which is bound up with English instincts and traditions, is still shown by the mode, which continues to prevail, of appointing the local commissioners of income-tax, and would probably render quite impossible, or cause such friction in its working that it would in effect become impracticable, any system of such inquisitorial bureaucracy as is borne with comparative equanimity by the other nation whose income-tax arrangements Dr. Ingenbleek is led to scrutinise in detail. Yet, as he observes, even in Prussia recourse has been had to a partial system of personal declarations, and in Prussia also fraudulent evasion is not, it seems, unknown.

But, notwithstanding these remarks, when the English reader peruses the account given in the first section of this book of the Belgian mode of taxing income indirectly, as contrasted with the direct method followed in this country, he may not improbably conclude that it is better to bear the evils of the income-tax we have than to fly to others with which we are unfamiliar. It is true, as Dr. Ingenbleek points out, that our own income-tax is combined in our fiscal system with some other duties levied on what may be, and are actually considered to be, indications of income, such, for example, as the inhabited house duty. And, where such tangible evidence exists, it can, no doubt, be urged with great force that the necessary uncertainty, and the wilful or unconscious fraud, attaching to personal declarations of income, are mitigated or removed. But Dr. Ingenbleek's informing narrative is written to little purpose if he does not prove beyond the possibility of serious dispute that these external indications of individual incomes may in practice lead to no less palpable injustice, and offer opportunity for no less demoralising evasion, or unintentional misunderstanding, of the actual legal fiscal obligation.

In fact the paradoxical result has been apparently achieved in Belgium of over-valuation in some instances, in order to secure the exercise of certain rights or privileges of the electoral franchise which have been attached to the enjoyment of wealth of a certain magnitude.

The letting value of the house or lodging where the taxpayer resides, the number of doors and windows in his dwelling place, and the furniture in his possession, are among the indications of income which have been thus employed; and the various defects incident to these several tests are demonstrated by instructive figures supplied by Dr. Ingenbleek. The main result is, as we understand his argument, to place a burden relatively lighter rather than relatively heavier upon the richer members of the population. The individual's right of declaration seems in practice in most cases to be idle; the correction of wrong assessment by the use of expert counsel appears in fact to be illusory, and an element of arbitrary irregularity is manifestly more obvious and common than the ordered system which should characterise a fair and efficient financial scheme.

And yet it may be noticed in conclusion that so impressed is the author of this book with the failings of a direct income-tax such as that employed in England or in Prussia, or at any rate so sure is his belief that it is essentially unsuited to the special circumstances of Belgium, that he directs his whole attention in the third and final section of his treatise to the improvement of some at any rate of these existing indirect methods of reaching income by levying duties on its external indications which are adopted in his country. He is in favour, in short, of an "indirect-tax on income," and he wishes to secure the specific and distinctive recognition in fiscal phraseology of this distinctive term. Such evidence of income as that afforded by the doors and windows of a dwelling place he would, it is true, discard as an obsolete anachronism; but the letting value of a house or lodging, and the furniture in the possession of the taxpayer, can, he holds, if properly employed, afford trustworthy tests for fiscal purposes. These should indeed be supplemented by the additional criteria supplied by the carriages or motors owned, the horses used, and the servants, male and female, employed, while bachelors apparently, as they are not adequately reached by the taxation obtained through these several channels, are, under a reformed system, to be subject to a special levy; and various exemptions and abatements are to be allowed. All these important matters Dr. Ingenbleek considers in detail, and his treatise, it should be added in conclusion, is duly furnished with a useful bibliography and with statistical appendices. L.L.P.

12.—*Economic Heresies.* By Sir Nathaniel Nathan. viii + 423 pp., 8vo. London: A. Constable and Co., 1908. Price 10*s.* 6*d.* net.

The author of this volume may perhaps appear to some impatient readers to be inordinately discursive. He may seem to them to introduce, "by hook or by crook," into some at any rate of his chapters, extraneous matter for the presence of which upon his pages the only abiding justification which can be advanced is the writer's personal wish to make his opinions known by way of commentary or criticism to those who will hearken to them. He cannot resist the temptation of being drawn some distance up the several byways opening from the main route along which he would have necessarily travelled, had he set before himself at the outset of his reasoning journey a defined goal and a circumscribed plan of advance. We ourselves believe that his book would have gained in convincing force, and have proved more useful and illuminating, both to the hurried and casual, and to the instructed, interested reader, had some "parcimony" (to employ his own phrase) of the nature we have indicated been sternly exercised.

And yet we must confess that the fuller description of the scope and meaning of his essay furnished on his title page might not unreasonably be held to justify this overpowering tendency to write at large "de omnibus rebus economicis et quibusdam aliis"; for Sir Nathaniel Nathan announces there his deliberate plain design to "appreciate the economic problems presented by things as they are." We understand from his Preface that he would have preferred to give to his whole book the alternative title which he thus indicates; and it had been already printed, and remains, as the heading of his pages. He found, however, that it had been appropriated previously for a work of a different character, and he accordingly substituted the new designation under which his book actually appears. The change thus made, although necessary, was, we think, in some respects unfortunate.

It is true that, as we are frankly informed in the Preface, "things as they are" were to have been opposed, not only to "things as they ought to be" (as conceived in those Utopian ideals of the Socialists of the twentieth century, to the examination of whose views and plans the later chapters of the book are devoted), but also to "things as they have been imagined to be" by the theoretical economists of the nineteenth century, whom our author views with pronounced distrust. It is true that Sir Nathaniel Nathan himself describes the attempt projected in this volume as "unorthodox," and announces his peculiar "heresy" as consisting of an agreement with the Socialists that the "formulæ deduced by orthodox economists are inadequate to afford a satisfactory explanation of the observed phenomena of civilisation on its economic side." Both in his Preface, and repeatedly in the main body of his book, he visits with censuring criticism the particular reasonings and conclusions of "orthodox" economists so-called; and he objects expressly to the new "creed of Collectivism," because, in his opinion, it consists similarly of a "set of doctrines equally dogmatic." His summary account, placed at the end of his third chapter, of our present Economics as being a "tentative enquiry into evanescent phenomena, connected with each other by 'laws' which we suspect but cannot verify," is perhaps neither inaccurate nor unfair.

But, with minor reservations, we imagine, it would be accepted by some at any rate of those who occupy at this date a prominent position in the ranks of professional economists. Nor would they, we suspect, seriously quarrel with the similar statement put forward by Sir Nathaniel Nathan that all economic phenomena whatever are essentially ephemeral, and subject to a vast multiplicity of causes, themselves ever changing and varying from time to time and from place to place. They might even approve generally of his conclusion that "this is a branch of knowledge in respect of which general axioms and first principles . . . . . must only be accepted provisionally and guardedly." We believe, in short, that Sir Nathaniel Nathan conceives, and states, with an extravagance rather than a lack of emphasis, the differences which part no small portion of the opinions enunciated in this work from those held by many contemporary economists, although his animadversions would still apply to some conspicuous authorities in times now past and gone. Even his attitude on the debated question of free trade and protection, balanced as it is in detail, might now be generally described as a venial, or a mild, kind of "heresy," shared by a number of economists of repute.

But, on the other hand, there can be no doubt, whether he be correct or be mistaken in the views which he propounds on the variety of economic topics, which he handles in succession, of the resolute purpose of the author of this book to see throughout, and to describe, "things as they are." The interesting and suggestive earlier chapters, in which he analyses, using concrete illustrative examples, the actual processes of wealth production, under the successive categories of mineral wealth, of animal and vegetable products, and of manufacturing industry, would suffice to demonstrate this attitude and to reveal this aim. And the chief merit of the whole volume seems to us to consist in the shrewd appreciation of hard realities, and the acute discrimination, born of intimate contact with affairs, which lead him to attempt, and to persist in the endeavour, to discriminate between the essential and the non-essential, to form and to announce a judgment on controverted questions which will stand the stern test of practical use and application, and to recognise without hesitancy or reserve the significant truth, so often disregarded, or forgotten, that circumstances may, and must, alter cases. For this reason anyone who perseveres in reading the different chapters of this essay will meet continually with some new comment or some fresh reflection which sets him thinking. He may not invariably agree with Sir Nathaniel Nathan, but he will at any rate be stimulated and compelled to discover reasons for his difference of opinion; and he can feel no doubt of the perfect candour and the entire independence which are characteristic of the book.

In the later chapters, for instance, which deal with Socialism, our author might, we think, be held to be more drastic and more comprehensive in his ideas on the death duties than many of his readers would have been prepared to find a writer whose criticism of the excessive burdens laid on landed property by local rates in England they had previously endorsed. And, similarly, on the fiscal question the opinions here put forward would probably command an unreserved adherence from neither party to that vexed debate. For, while Sir Nathaniel Nathan reduces to very narrow limits the hopes confidently entertained by tariff reformers, with respect both to the development of mutually advantageous inter-imperial trade between Great Britain and her colonies, and to the mitigation or removal of the disabilities placed on English commerce by the restrictive tariffs of foreign nations, he gives an interpretation to the reassuring maxim that imports are paid for by exports which might disquiet seriously the convinced free trader. For he truly says that the settlement is effected by a transfer of values, and of what values this transfer will consist depends upon the circumstances of the country or the countries which are concerned. And he lays the greatest stress on the conservation and development of productive power. The tables in which he sums up the case, putting the pros and cons against each other, and attempting to give a quantitative estimate to each favourable or adverse argument, is, we think, no inapt illustration of the general character of his book. The "personal equation," which makes the arguments for protection count for 67 per cent. and the arguments for free trade for the remaining 33, may not satisfy one section of his readers. Others may deem the whole method thus employed fanciful and illusive. But, on closer scrutiny, they will find that the arguments themselves thus weighed against each other are stated with conspicuous fairness and unusual moderation. Their weak points are not hidden, nor is their strength concealed. Whether the author's judgment be right or wrong it is not lightly given or hurriedly pronounced. It may be accurately described as "balanced"; and yet the statement made of it is as original and suggestive as its formation has been independent and deliberate. L.L.P.

13.—*Other New Publications.**

Baron (*Harold*). Chemical industry on the Continent: a report to the electors to the Gartside scholarship. xiv + 72 pp., 8vo. Manchester: University Press, 1909, 1*s*. net.

[Belgium, Northern France, Germany.]

Bellom (*Maurice*). Les techniciens et la comptabilité. 54 pp., 8vo. Paris: H. Dunod and E. Pinat, 1909.

[Advocates organisation of public accountants, with State supervision.]

Boissevain (*G. M.*). Money and banking in the United States. Translated from the Dutch. 56 pp., 8vo. Amsterdam: J. H. de Bussy, 1909.

[Calls attention to "the lack of elasticity of the fiduciary currency."]

Borght (*Dr. R. van der*). Die Entwicklung der Reichsfinanzen (Sammlung Göschen). 170 pp., 12mo. Leipzig: G. T. Göschen, 1908. 80 pf.

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* See also "Additions to the Library," pages 439 *sqq*.

Conrad (*Johannes*). Grundriss zum Studium der politischen Oekonomie. IV. Teil: Statistik. ii. Teil: Die Statistik der wirtschaftlichen Kultur. II. Hälfte, 1. Band: Gewerbestatistik; von Prof. Dr. A. Hesse. 380 pp., 8vo. Jena: Gustav Fischer, 1909. 10 marks.

Duplessix (*E.*). L'organisation internationale. 152 pp., 8vo. Paris: Larose et Tenin, 1909. 3 frs.

[Proposes the creation of an international legislative, administrative and judicial authority.]

Francken (*Edmond*) and *Mahaim* (*Ernest*). La statistique mathématique en Angleterre: la loi d'erreur de M. F. Y. Edgeworth 48 pp., 8vo. Liege: *Revue universelle des Mines, de la Métallurgie, &c.*, 1908.

Fry (*T. Hallett*). The Income-Tax incubus and the Budget. ix + 102 pp., sm. 8vo. London: Horace Cox, 1909. 1*s.*

Gibson (*Arthur H.*). Human economics: Books I and II. Natural economy and cosmopolitan economy. 406 pp., 8vo. London: Longmans, Green, 1909. 10*s.* 6*d. net.*

[Natural economy is "concerned with the operation of human faculties in satisfying human requirements, and with the motives which induce the species to produce." Cosmopolitan economy "treats of the interrelations of production and consumption under the human institutions of private property and exchange."]

Gide (*Charles*) and *Rist* (*Charles*). Histoire des doctrines économiques depuis les Physiocrates jusqu'à nos jours. xv + 766 pp., 8vo. Paris: Larose et Tenin, 1909. 12 frs.

[The doctrines are grouped in five families—the Founders and their opponents, Liberalism and its opponents, and recent doctrines—each treated chronologically.]

Gini (*Corrado*). Il calcolo della ricchezza di un paese in base alle statistiche delle successioni e donazioni. 68 pp., sm. 4to. Treviso: L. Zoppelli, 1909.

[Contains sections on the methods of calculation employed by M. de Foville and Mr. Bernard Mallet.]

——— Il sesso dal punto di vista statistico: le leggi della produzione dei sessi (Biblioteca Sandron di Scienze e Lettere). xxx + 520 pp., 8vo. Milano: Remo Sandron, 1908. 8 L.

Halbwachs (*Maurice*). Les expropriations et le prix des terrains à Paris (1860-1900). 416 pp., 8vo., with maps and diagrams. Paris: E. Cornély et Cie., 1909. 8 frs.

Hirst (*Margaret E.*). Life of Friedrich List, and selections from his writings. With introduction by F. W. Hirst. xxii + 332 pp., 8vo. London: Smith, Elder, 1909. 7*s.* 6*d.* net.

[The writings included are: Petition to the German Federal Assembly on behalf of the Handelsverein, 1819; Outlines of American Political Economy, 1827; Speech to the Pennsylvania Society, 1827; Introduction to the "National System of Political Economy."]

Hobson (*J. A.*). The industrial system: an inquiry into earned and unearned income. xx + 328 pp., 8vo. London: Longmans, Green, 1909. 7*s.* 6*d.* net.

[An account of the main operations of industry, in the light of the conception of a surplus fund of wealth available for industrial and social progress.]

Kirchhoff (*Robert*). Über das Verhältnis der Geschlechter in Indien, bearbeitet nach amtlichem Material. 118 pp., 8vo. 1909.

Lewis (*Frank W.*). State insurance: a social and industrial need. 234 pp., 8vo. London: Constable, 1909. 5*s.* net.

Lindheim (*Alfred von*). Saluti senectutis: die Bedeutung der menschlichen Lebensdauer im modernen Staate: eine sozialstatistische Untersuchung. II. Auflage. xii + 502 pp., la. 8vo. Leipzig: F. Deuticke, 1909.

Mayr (*Georg von*). Statistik und Gesellschaftslehre. Band 3, Sozialstatistik. (Moralstatistik, Bildungsstatistik, Wirtschaftsstatistik, Politische Statistik.) Lief. 1. (Aus Handbuch des Öffentlichen Rechts: Einleitungsband.) 260 pp., 8vo. Tübingen: J. C. B. Mohr, 1909.

Meyer (*Mrs. Carl*) and *Black* (*Clementina*). Makers of our clothes; a case for trade boards: being the results of a year's investigation into the work of women in London in the tailoring, dressmaking, and underclothing trades. 8vo. London: Duckworth, 1909.

Pic (*Paul*). La protection légale des travailleurs et le droit international ouvrier. 172 pp., 8vo. Paris: F. Alcan, 1909.

[An account of labour legislation in France and abroad and of the work accomplished by the "Association internationale pour la protection légale des travailleurs."]

Shadwell (*Arthur*). Industrial efficiency: a comparative study of industrial life in England, Germany, and America. New edition. 720 pp., 8vo. London: Longmans, Green, 1909. 6*s.* net.

[This edition contains a supplementary chapter on Factory Laws and conditions. The first edition was reviewed at length in this *Journal*, vol. lxix (1906), p. 611.]

Simon (*André L.*). The history of the wine trade in England. Vol. 3. The wine trade in England during the seventeenth century. 418 pp., 8vo. London: Wyman, 1909.

[This and the two previous volumes are based on studies of State papers, Treasury books, and indirect evidence from various sources.]

Steele (*Francis E.*). Present-day banking: its methods, tendencies and characteristics. xx + 236 pp., 8vo. London: Butterworth, 1909. 5*s.*

[Written from a commercial rather than a purely banking standpoint.]

Tomson (*Frederick W.*). High licence: a critical examination of the licence duties prevailing in the United Kingdom and in the United States. xi + 74 pp., 8vo., diagrams. London: Macmillan, 1909. 1*s.* net.

[A criticism of Messrs. Rowntree and Sherwell's book: "The taxation of the liquor trade."]

STATISTICAL AND ECONOMIC ARTICLES IN RECENT PERIODICALS.

UNITED KINGDOM—

Accountants' Magazine, 1909—

April—May—The English Crown finances. Part I (1558-1603); Part II (1558-1603): *Scott* (*W. R.*).

June—Town council audits: *Whigham* (*Charles F.*).

Bankers' Magazine, 1909—

April—The budget. Banks as executors and trustees. Progress of banking in Great Britain and Ireland during 1908.—No. 3. Canadian banking, 1908.

May—The gold reserve controversy. Progress of banking in Great Britain and Ireland during 1908.—No. 4. Bank amalgamations: *Phillips* (*Maberly*).

June—The budget. Bankers' memorial to the Premier. Progress of banking in Great Britain and Ireland during 1908.—No. 5. Canadian finance: *Lawson* (*W. R.*). The National finances.

Economic Journal. June, 1909—The practical aspects of economics: *Price* (*L. L.*). The gold exchange standard in the light of experience: *Conant* (*Charles A.*). The foreign exchange policy of the Austro-Hungarian bank: *Mises* (*L. V.*). International labour treaties: *Francke* (*Ernst*). The budget of 1909: *Bastable* (*Prof. C. F.*). Income tax and depreciation: *Leake* (*P. D.*). Trade unions in the tinplate industry: *Jones* (*J. H.*). The incidence of import duties—a correction and explanation: *Chapman* (*Prof. S. J.*). Address by Sir Charles Dilke.

Economic Review. April, 1909—The reports of the Poor Law Commission: *Jones* (*Thomas*). The problem of West Ham: *Baumgarten* (*Rev. C.*). The root problem of unemployment: *Lightbody* (*W. M.*). The cause of labour: *Binyon* (*Rev. G. C.*). Legislation, parliamentary inquiries and official returns: *Pringle* (*Rev. J. C.*).

Financial Review of Reviews, 1909—

April—The taxation of land values: *Rolleston* (*Sir John*). The export of British capital: a labour view: *Macdonald* (*J. Ramsay*). Geographical distribution of capital and the world's social conditions: *Kleinwächter* (*Prof. Frederick*). Taxation schemes and their bearings on the coming budget: *Crozier* (*Dr. J. Beattie*).

May—The outlook for Egypt: *Dicey* (*Edward*). The localisation of investment: *Scott* (*W. R.*). The navy programme and national investments: *Taylor* (*Benjamin*). A Belgian view of international investment: *Ansiaux* (*Prof. M.*).

June—Labour exchanges and compulsory insurance: *Maclaren* (*Rt. Hon. Sir Charles*). Labour exchanges and compulsory insurance: *Cox* (*Harold*). The inside of a balance sheet: *Foster* (*A. R.*) and *Tovey* (*P.*). The taxation of land values: *Fels* (*Joseph*). The international increase in rates of interest: *Waltershausen* (*Dr. A. S. von*).

UNITED KINGDOM—*Contd.*

Journal of the Board of Agriculture, 1909—

April—The financial aspect of sheep-washing: *Wale* (*Bernard N.*). The poultry industry in Germany. Area of land available for afforestation. The corn markets in March: *Kains-Jackson* (*C.*). The live and dead meat trade in March: *Matthews* (*A. T.*). The provision trade in March: *Stevens* (*Hedley*).

May—Co-operative bacon curing: *Douglas* (*Loudon M.*). The potato trade of Lincolnshire in 1908-09: *Amos* (*H.*).

June—Sale of seeds by the German Agricultural Society. Census of live stock in Germany. Committee on combinations in the meat trade.

Journal of Department of Agriculture, &c., for Ireland. April, 1909—The dead meat trade. Keeping of egg records. The winter class: *Gill* (*T. P.*). Pig feeding experiments. Protection of woodlands in Ireland. Marketing of Irish produce in 1908. Tobacco growing in Ireland.

Journal of Royal Agricultural Society. Vol. 69, 1908—Sir Nigel Kingscote: *Clarke* (*Sir Ernest*). The sheep stock of Gloucestershire. Farm book-keeping: *Orwin* (*C. S.*). Report of Lord Reay's Committee on agricultural education: *Lamont* (*Norman*). The Newcastle show, 1908. Report on the farm prize competitions, 1908: *Hogg* (*William H.*). The Woburn experimental station: *Voelcker* (*J. Augustus*). Statistics affecting British agricultural interests. The weather during the agricultural year 1907-08: *Brodie* (*Frederick J.*).

Journal of Institute of Actuaries. April, 1909—On a new method of constructing and of graduating mortality and other tables: *King* (*George*). On an approximate method of valuation of whole-life assurances, grouped according to attained ages, with allowance for selection on the basis of O(M.) mortality: *Brown* (*E. H.*). Note on the application of Mr. E. H. Brown's method to select valuations by the British offices whole-life non-participating O(N.M) table. On the graphic delineation of interpolation formulæ: *Fraser* (*Duncan C.*). On premiums payable by instalments for whole-life assurances: *Shovelton* (*S. T.*).

Journal of the Institute of Bankers, 1909—

April—Our money market and American banking and currency reform: *Mason* (*David M.*). The law of bankers' guarantees: *Campion* (*Bernard*). Registration of charges under the Companies (Consolidation) Act, 1908: *Tillyard* (*F.*).

May—Gilbart lectures, 1909: *Paget* (*Sir John*). Clearing house returns of the United States.

June—Report of the Council and proceedings at the annual general meeting.

Journal of the Royal Colonial Institute, 1909—

April—The development of Empire trade and industry: *Morgan* (*Ben. H.*).

May—Greater South Africa: *Michell* (*The Hon. Sir Lewis*).

June—Imperial emigration and its problems: *Arthur* (*Dr. Richard*).

UNITED KINGDOM—*Contd.*

Surveyors' Institution. Transactions. Session 1908-09—*Part VIII*—Giant London. The evolution of a great city; its growth in size and value: *Head (J. George).*

UNITED STATES—

American Journal of Sociology, 1909—

March—The family and social change: *Sumner (W. G.).* How home conditions react upon the family: *Gilman (C. P.).* The effect on woman of economic dependence: *Zeublin (Charles).* The relations of social diseases to the family: *Morrow (Prince A.).* The influence of income on standards of life: *Chapin (R. C.).* The family in a typical mill town: *Byington (Margaret F.).* Results of the Pittsburgh survey: *Devine (Edward T.).* Are modern industry and city life unfavorable to the family? *Henderson (C. R.).*

May—Rural life and the family: *Butterfield (K. L.).* Some questions concerning the higher education of women: *Wells (D. C.).* How does the access of women to industrial occupations react on the family? *Weatherly (U. G.).* Is the freer granting of divorce an evil? *Howard (G. E.).* How far should members of the family be individualized? *Hagerty (James E.).* How far should family wealth be encouraged and conserved? *Holmes (G. K.).*

American Statistical Association. Quarterly Publications. No. 85. *March*, 1909—State pensions and annuities in old age: *Hoffman (Frederick L.).* Massachusetts savings-bank insurance and pension system: *Brandeis (Louis D.).* The work of the Massachusetts commission on old age pensions: *Baldwin (F. Spencer).* The relation of statistics to economics and sociology: *North (S. N. D.).*

Bankers' Magazine (New York), 1909—

April—The big banks of to-day. II. The French group: *Lawson (W. R.).* Glimpses of banking in Chicago. Savings banks. The bank and its depositors: *Kniffin (W. H.).*

May—The modern way of financing imports: *Escher (Franklin).* Suburban banking in Cleveland: *Ford (Horatio).* Savings banks; their surplus and interest rate: *Fletcher (Henry).* Fallacies of postal savings banks: *Frame (Andrew J.).*

June—Some banking and currency problems of to-day and to-morrow: *Youngman (E. H.).* The big banks of to-day: *Lawson (W. R.).* The Co-operative or people's bank.

Bulletin of the Bureau of Labor, 1908. *No.* 79. *November*—Mortality from consumption in dusty trades: *Hoffman (Frederick L.).* Charity relief and wage earnings: *Forman (S. E.).* Digest of recent reports of state bureaus of labor statistics. Digest of recent foreign statistical publications.

Journal of Political Economy, 1909—

April—Valuation of railways, with especial reference to the physical valuation in Minnesota: *Dunn (Samuel O.).* The conversion of the economist: *Cummings (John).*

May—Gold and prices: *Laughlin (J. L.).* An economic history of the Illinois and Michigan Canal: *Putnam (J. W.).*

UNITED STATES—*Contd.*

Political Science Quarterly. *March*, 1909—Municipal socialism and its economic limitations, with special reference to conditions in New York City: *Levey* (*E. J.*). Unionism in the iron and steel industry: *Fitch* (*J. A.*). A year of bench labor war: *Thomas* (*D. Y.*).

Quarterly Journal of Economics. *May*, 1909—The proposal for a central bank in the United States: a critical view: *Sprague* (*O. M. W.*). The variability in the distribution of wealth and income: *Persons* (*W. M.*). The sliding scale of wages in the cotton industry: *Lincoln* (*J. T.*). Local discrimination in transportation: *Ripley* (*W. Z.*). Socialism and the class war: *Martin* (*John*). Coffee: "valorization" in Brazil: *Hutchinson* (*L.*). The burden of the sugar duty: *Taussig* (*F. W.*).

Annals of American Academy of Political and Social Science, 1909—*March*—Employment bureau for the people of New York City: *Devine* (*Edward T.*). The future of labor: *Carnegie* (*Andrew*). Employees' benefit association of the international harvester company: *Price* (*C. W.*). Pennsylvania railroad pension departments: *Riebenack* (*M.*). The logic of social insurance: *Henderson* (*C. R.*). Condition of labor in southern cotton mills: *Parker* (*Lewis W.*). Recent Massachusetts labor legislation: *Baldwin* (*F. S.*). Pay of labor in New England cotton mills: *Golden* (*John*). Labor in the steel industry: *Fitch* (*John A.*). Labor conditions in the mines of the Pittsburgh district: *Leiserson* (*W. M.*). Work of women in the mercantile houses of Pittsburgh: *Butler* (*E. B.*). The negro mine laborer: *Surface* (*G. T.*). Seasonal occupation in the building trades: *Grant* (*Luke*). The supply of farm labor: *Holmes* (*G. K.*). The influence of immigration on agricultural development: *Coulter* (*J. L.*). The Italian as an agricultural laborer: *Pecorini* (*Prof. A.*). Negro labor and the boll weevil: *Stone* (*A. H.*). The Jewish immigrant as an industrial worker: *Bernheimer* (*C. S.*). Labor and wages in France: *Levasseur* (*E.*). The problem of unemployment in the United Kingdom: *Webb* (*Sidney*). Present state of labor legislation in Australia and New Zealand: *Clark* (*Victor S.*).
May—Forestry on private lands: *Pinchot* (*Hon. Gifford*). Public regulation of private forests: *Graves* (*Prof. H. S.*). Can the States regulate private forests? *Zacharie* (*F. C.*). Water as a resource: *McGee* (*W. J.*). Water power in the United States: *Leighton* (*M. O.*). The scope of State and federal legislation concerning the use of waters: *Wright* (*C. E.*). The necessity for State or federal regulation of water power development: *Baker* (*C. W.*). Federal control of water power in Switzerland: *Cleveland* (*Treadwell*). Classification of the public lands: *Woodruff* (*G. W.*). A summary of our most important land laws: *Neison* (*Hon. Knute*). Indian lands: their administration with reference to present and future use: *Leupp* (*Hon. Francis E.*). The conservation and preservation of soil fertility: *Hopkins* (*C. G.*). Farm tenure

UNITED STATES—*Contd.*

Annals of American Academy of Political and Social Science—Contd.

May—Contd.

in the United States: *Gannett* (*Henry*). What may be accomplished by reclamation: *Newell* (*Hon. Frederick H.*). The legal problems of reclamation of lands by means of irrigation: *Bien* (*Morris*). Our mineral resources: *Smith* (*Hon. George Otis*). The production and waste of mineral resources and their bearing on conservation: *Holmes* (*J. A.*). Preservation of the phosphates and the conservation of the soil: *Hise* (*Charles Richard van*).

Supplement. March, 1909—Conserving childhood: *Draper* (*A. S.*). Duty of a rich nation to take care of her children: *Seligman* (*I. N.*). Duty of a rich nation to take care of her children. II: *Henderson* (*C. R.*). The federal children's bureau—a symposium. Some unsettled questions about child labor: *Lovejoy* (*O. R.*). The child and the law: *McKelway* (*A. J.*). Child labor in the textile industries and canneries of New England: *Lord* (*E. W.*). Child labor in the Ohio Valley States: *Clopper* (*E. N.*). Practical restrictions on child labor in textile industries; higher educational and physical qualifications: *Cheney* (*Howell*). Scholarships for working children: *Kelley* (*Florence*). Some effects of improper posture in factory labor: *Freiberg* (*A. H.*). Child labor and the juvenile court: *Britton* (*J. A.*). Overworked children on the farm and in the school: *Hutchinson* (*Woods*). Handicaps in later years from child labor: *Harmon* (*W. E.*). Accidents to working children: *Deleon* (*E. W.*). Uniform system of child labor statistics: *Williams* (*John*). The present situation in Illinois: *Davies* (*E. T.*). The forward step in Louisiana: *Gordon* (*J. M.*). The difficulties of child labor legislation in a southern State: *McDowell* (*J. R.*). Reports from State and local child labor associations.

American Economic Association Quarterly. April, 1909—The making of economic literature.—Presidential address: *Patten* (*S. N.*). The theory of collective bargaining: *Clark* (*J. B.*). Accounting in its relation to economics: *Robinson* (*Maurice H.*). A definition of accounting: *Duncan* (*J. C.*). The present position and probable development of accountancy as a profession. Fundamental distinctions in labor legislation: *Farnam* (*H. W.*). The American way of distributing industrial accident losses: *Eastman* (*Miss Crystal*). What form of accident insurance should our States adopt? *Lorenz* (*M. O.*). The Canadian industrial disputes Act: *Shortt* (*A.*). The influence of income on the standards of life: *Chapin* (*R. C.*). The family in a typical mill town: *Byington* (*Margaret F.*). Results of the Pittsburgh survey: *Devine* (*Edward T.*). Are modern industry and city life unfavourable to the family? *Henderson* (*Charles R.*). Rural life and the family: *Butterfield* (*Kenyon L.*). Economic geography: an attempt to state what it is and what it is not: *Robinson* (*Edward V. D.*). Co-operation in the marketing of

UNITED STATES—*Contd.*

American Economic Association Quarterly. *April*, 1909—*Contd.* agricultural produce: *Coulter* (*John Lee*). Factors affecting the future of water transportation in the United States: *Johnson* (*E. R.*). The best way to work for tariff revision: *Emery* (*H. C.*). Dual tariff systems: *Stone* (*N. I.*). Tariff revision and foreign markets: *Litman* (*Simon*). Central bank of the United States: *Warburg* (*P. M.*). The work of the national monetary commission: *Andrew* (*A. Piatt*). Control of the capitalization of public service corporations in Massachusetts: *Bullock* (*C. J.*).

Yale Review. *May*, 1909—Spain since 1898: *Guijarro* (*L. G.*). Industrial leadership: *Day* (*Clive*). The New York stock exchange and the panic of 1907: *Meyer* (*Eugene*). The nature of commercial or economic geography: *Bishop* (*A. L.*). The Carl-Zeiss-Stiftung an attempt to socialize capitalism: *Farnam* (*H. W.*).

AUSTRIA-HUNGARY—

Statistische Monatschrift, 1909—

January—Erhebungstechnische Probleme der österreichischen Volkszählung: *Spann* (*Dr. Othmar*). Die Geburten und Sterbefälle in den grösseren Städten und Gemeinden Österreichs in den Jahren 1904-07: *Pflügl* (*Richard von*).

February—Die Unehelichkeit in Österreich nach Volksstämmen und ihre Entwicklung im letzten Jahrzehnt: *Spann* (*Dr. Othmar*).

March—Die Legitimation der unehelichen Kinder in Österreich unter Berücksichtigung der Sterblichkeit nach Gebieten: *Spann* (*Dr. Othmar*). Der auswärtige Warenverkehr Bosniens und der Herzegowina im Jahre 1907: *Pausinger* (*V.*). Österreichs Sparkassen im Jahre 1907: *Ehrenberger* (*H.*). Die leerstehenden Wohnungen in Barmen nach der Zählung vom 1. December 1908: *Delannoy* (*Dr. René M.*).

FRANCE—

Annales des Sciences Politiques, 1909—

March—Les caisses de chômage et les subventions des pouvoirs publics en France: *Lavergne* (*A. de*) et *Henry* (*L. Paul*). Les Saint-Simoniens et les chemins de fer: l'exécution du réseau (suite et fin): *Wallon* (*W.*). La conférence coloniale de Londres (1907): *Rain* (*Pierre*). Chronique des questions ouvrières (1908): *Festy* (*Octave*).

May—Les lois agraires anglaises de 1892 et de 1907: *Savary* (*H. R.*). L'armée autrichienne: *B.* (*M.*). La réforme de l'enseignement en Chine: *Ki-tseng* (*Ouang*). Chronique législative (1908): *Lavergne* (*A. de*).

Bulletin de Statistique, Ministère des Finances, 1909—

February—Les successions et donations depuis 1871. La situation financière des communes en 1907. Les opérations de la Banque de France en 1908.

FRANCE—*Contd.*

Bulletin de Statistique, Ministère des Finances, 1909—*Contd.*

March—Les produits de l'enregistrement, des domaines et du timbre constatés et recouvrés en France pendant 1907. Produits des contributions indirectes pendant 1908. Les recettes des théâtres et spectacles de Paris en 1908.

April—Les contributions directes et taxes assimilées en 1908. Pays divers.—Le montant des charges fiscales dans les principaux pays. Belgique.—Évaluation de la fortune mobilière.

May—Recettes et dépenses comparées des exercices 1898 à 1907. L'impôt sur les vélocipèdes en 1908. La caisse nationale d'épargne en 1907.

Journal des Économistes, 1909—

April—Les procédés de la Commission des douanes: *Guyot* (*Yves*). Le projet d'impôt sur le revenu: *Nouvion* (*Georges de*). Les entrepôts à domicile ou autres et leurs avantages pour l'industrie et le commerce: *Letourneur* (*E.*). L'insaisissabilité des salaires et petits traitements: *Rourray* (*J.*).

May—La réforme des chemins de fer algériens: *Macquart* (*Émile*). Le canton: organe de décentralisation: *Bonnaud* (*Paul*). Les associations coopératives en Allemagne: *Raffalovich* (*Arthur*).

June—La nouvelle loi allemande sur les opérations de bourse: *C.* (*E.*). Les inutiles complications de l'impôt sur le revenu: *Henricet* (*J. G.*).

Journal de la Société de Statistique de Paris, 1909—

March—La part du capital et du travail dans la production: *Guyot* (*Yves*). La statistique des accidents en Allemagne: *Bellom* (*Maurice*). Les progrès économiques des pays scandinaves: *Cadoux* (*G.*).

April—Rapport du trésorier sur les comptes et la situation financière de la Société de statistique de Paris en 1908 et le budget pour 1909. Les établissements de crédit depuis cinquante ans—leur rôle, leur développement, leurs opérations: *Neymarck* (*Alfred*).

May—Chronique trimestrielle des banques, changes et métaux précieux: *Roulleau* (*G.*).

La Réforme Sociale, 1909—

16*th March*—L'assurance contre le chômage.—I. L'assurance facultative en Allemagne: *Olphe-Galliard* (*G.*). Le mouvement de la population en Allemagne: la recherche de la paternité; le régime successoral: *Dorff* (*Alfred*). La loi sur la petite propriété, les caisses d'épargne et les sociétés d'habitations à bon marché: *Rostand* (*Eugène*).

1*st April*—La question des fonctionnaires: *Mazel* (*Henri*). L'ouvrier polonais; sa vie de famille; son budget: *Woycicki* (*A.*). La famille: *Cheysson* (*M.*). L'impôt sur le revenu et les bénéfices agricoles: *Zolla* (*Daniel*). Chronique du mouvement social.—Italie et Espagne: *Lepelletier* (*F.*).

FRANCE—*Contd.*

La Réforme Sociale, 1909—*Contd.*

16*th April*—Le logement des familles nombreuses à faible salaire: *Cheysson* (*M.*). Le travail au point de vue ouvrier et au point de vue patronal: *Honoré* (*M.*).

1*st May*—Le futur régime de l'enseignement secondaire: *Coissac* (*J. B.*). L'assurance contre le chômage.—II. L'assurance obligatoire en Suisse: *Olphe-Galliard* (*M. G.*). Chronique du mouvement social: *Blondel* (*G.*) et *Lepelletier* (*F.*).

16*th May*—Les employés: *Brants* (*Victor*). De l'omnibus à l'autobus: *Duval-Arnould* (*M*). Chronique du mouvement social.—Pays de langue anglaise: *Angot des Rotours* (*Baron J.*).

1*st June*—Vingt ans d'efforts en faveur du crédit populaire: *Rostand* (*Eugène*). L'assurance contre le chômage.—III. Application au chômage du système de l'assurance: *Olphe-Galliard* (*G.*). Les grèves et la défense patronale: *Rivière* (*Louis*). Chronique du mouvement social.—France: *Béchaux* (*Auguste*).

Revue d'Économie Politique, 1909—

March—L'exode du montagnard et la transhumance du mouton en France: *Fabre* (*L. A.*). La réalité des surproductions générales.—Essai d'une théorie des crises générales et périodiques: *Aftalion* (*Albert*).

April—L'assurance contre le chômage: *Bellom* (*Maurice*). Le mouvement néo-corporatif et le syndicalisme ouvrier en Allemagne et en Autriche: *Pic* (*P.*).

May—L'évolution du prolétariat industriel en Hongrie: *Jaray* (*Gabriel-Louis*). Chronique budgétaire et fiscale: *Allix* (*Edgard*).

GERMANY—

Archiv für Rassen- und Gesellschafts-Biologie. March—April, 1909—Gesetzmässigkeiten in der Vererbung und Verbreitung verschiedener hereditär-familiärer Erkrankungen: *Merzbacher* (*Dr. L.*).

Archiv für Sozialwissenschaft und Sozialpolitik. May, 1909—Siedlungsfragen und Eingeborenenpolitik. I. Die Probleme der Mischkolonie: *Bonn* (*Dr. Moritz J.*). Arbeiterversicherung und Aerztestand: *Frankenberg* (*von*). Zur Psychophysik der industriellen Arbeit. III. (Fortsetzung): *Weber* (*Max*).

Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft (*Schmoller's*), *Heft* 2, 1909—Über die Theorien des Geldwesens. Vortrag gehalten in der Juristischen Fakultät zu Leipzig am 31. Dezember, 1908: *Knapp* (*G. F.*). Die Ordnung des Geld- und Kapitalmarktes: *Spiethoff* (*Arthur*). Polnische Handels- und Zollverhältnisse im 16. bis 18. Jahrhundert: *Rachel* (*Hugo*). Der Streit um die innere Kolonisation in Ostpreussen: *Swart* (*F.*). Die Heimarbeit-Ausstellung in Frankfurt-am-Main: *Sussnitzki* (*Alphons J.*). Der Deutsche Holzarbeiterverband.

GERMANY—*Contd.*

Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft (*Schmoller's*), *Heft* 2, 1909—*Contd.*

Verfassung und Verwaltung einer modernen Gewerkschaft: *Cassau* (*Theodor*). Historische und kritische Untersuchungen über die freien Interessenvertretungen von Industrie, Handel und Gewerbe in Deutschland. II: *Krueger* (*Hermann Edwin*). Sozialrevolutionäre Bewegungen in der Demokratie: *Herkner* (*Heinrich*). Italienische Wirtschaftsverhältnisse: *Kreuzkam* (*Theodor*). Eine neue Methode der Vergleichung statistischer Reihen (im Anschluss an Mitteilungen über kriminalistische Forschungen): *Tönnies* (*Ferdinand*). Bericht über die 28. Jahresversammlung des Deutschen Vereins für Armenpflege und Wohltätigkeit: *Münsterberg* (*Emil*).

Jahrbücher für Nationalökonomie und Statistik (*Conrad's*), 1909—

March—Die Bedeutung der wissenschaftlichen Nationalökonomie für die praktische Wirtschaftspolitik: *Diehl* (*Karl*). Die wirtschaftliche Gesetzgebung des Deutschen Reiches im Jahre 1908. Die Entwickelung der rumänischen Petroleumindustrie und ihre wirtschaftliche Bedeutung fur Deutschland: *Hänig* (*A.*). Die Privatbeamtenversicherung nach dem Regierungsvorschlage: *Hirsch* (*Julius*). Die Entwickelung des Schosses in der freien Reichsstadt Goslar am Harz bis zu seiner Aufhebung im Jahre 1808: *Conrad* (*Max*).

April—Beiträge zur Reichsfinanzreform: *Gerloff* (*W.*). Das ländliche Erbrecht des neuen schweizerischen Zivilgesetzbuches: *Rudloff* (*Hans L.*). Das Kölner Museum für Handel und Industrie: *Wiedenfeld* (*Kurt*). Ernst Abbes Sozialpolitik: *Elster* (*Alexander*). Der Tabaksmonopolentwurf des Jahres 1882 im Deutschen Reiche: *Krueger* (*Alexander*).

May—Ueber den Einfluss des Getreideterminhandels auf die Getreidepreise: *Fröchtling* (*A.*). Die wirtschaftliche Gesetzgebung des Deutschen Reiches im Jahre 1908. Die Technik des Danziger Getreidehandels: *Damme* (*Paul*). Neue Beiträge zur Statistik der städtischen Schulen in Deutschland: *Most* (*Otto*). Entwickelung des Kleinbesitzes in Russisch-Polen: *Rosenwerth* (*Stanislaus Baron von*). Die deutschen Aktienhotels seit 1871: *Marquardt* (*E.*).

June—Ueber Handwerkergilden und Verbrüderungen in Spanien: *Leonhard* (*R.*). Die wirtschaftliche Gesetzgebung Italiens in den Jahren 1905-07: *Bresciani* (*T. C.*). Die Bankuntersuchung 1908: *Brandt* (—). Die Brotpreise in Berlin in den Jahren 1899-1908: *Guradze* (*Hans*).

Vierteljahrshefte zur Statistik des Deutschen Reichs, 1909. *Heft* 2—Auswärtiger Handel 1908. Schlachtvieh und Fleischbeschau 1908. Krankenversicherung in den Knappschaftskassen und -vereinen 1907. Die Erzeugnisse der Bergwerke, Salinen und Hütten 1908. Vorläufige Mitteilung. Die Finanzen des Reichs und der deutschen Bundesstaaten (1908 und 1906). Vorläufige Ergebnisse der landwirtschaftlichen Betriebszählung am 12. Juni 1907.

GERMANY—*Contd.*

Zeitschrift für Socialwissenschaft, 1909—

Heft 4—Ein Grundgesetz der sozialen Entwicklung und seine Bedeutung für das Aufsteigen und den Niedergang der Völker. I. : *Chatterton-Hill* (*George*). Adam Smith und Adam Ferguson. II. : *Oncken* (*August*). Der Bericht der Armengesetzgebungskommission und die Entwicklung des bürgerlichen Sozialismus in England : *Martin* (*Lindsay*). Kindermisshandlungen und Strafrecht : *Peschke* (*Kurt*).

Heft 5—Die Bekämpfung der Landstreicherplage in den Vereinigten Staaten : *Schultze* (*Ernst*).

Heft 6—Altersgliederung und Sterblichkeit in England und Deutschland : *Prinzing* (*Friedrich*). Das Wesen und der Hauptinhalt der theoretischen Nationalökonomie : *Pohle* (*Ludwig*).

Zeitschrift für die gesamte Staatswissenschaft. Heft 2, 1909—Ueber die Bedeutung der Verwaltungslehre als selbständige Wissenschaft : *Schmid* (*Ferdinand*). Der mittlere und niedere landwirtschaftliche Unterricht in Deutschland : *Hey* (*Karl*). Zur Diagnose der Reichsfinanzreform : *Plenge* (*Johann*). Fortschritte der Kinderschutz-Gesetzgebung in Kanada : *Schultze* (*Ernst*). Die Bruderladen im österreichischen Sozialversicherungsgesetzentwurfe vom 3. November 1908 : *Kompert* (*Paul*).

Zeitschrift für Versicherungs-Wissenschaft. April, 1909.—Die Bestrebungen zur Vereinfachung der Arbeiterversicherung : *Rosin* (*Dr.*). Analytische Methoden in der Lebensversicherung : *Brendel* (*Dr.*). Die Obmannstaxe in der Hagelversicherung als Schiedsspruch : *Marck* (*Dr.*). Der Brandfall zwischen Übergabe, Auflassung und Eigentumseintragung : *Josef* (*Dr.*). Rentenminderung infolge späterer Erwerbsunfähigkeit oder Erwerbsbeschränktheit aus anderen Ursachen : *Kifskalt* (—). Reform und Ausbau der Sozialversicherung in Österreich : *Herz* (*Dr.*). Die Schadenregulierung in der Haftpflichtversicherung unter Berücksichtigung des Gesetzes über den Versicherungsvertrag : *Unfried* (—). Die Bezeichnung des Bezugsberechtigten bei der Lebensversicherung auf Todesfall : *Göfsmann* (—).

ITALY—

Giornale degli Economisti, 1909—

March—Revisione critica dei recenti concetti nella teoria del capitale e delle loro fondamentali applicazioni : *Amoroso* (*L.*). La libertà e l'obbligatorietà nelle assicurazioni sociali : *Arias* (*G.*). Sui metodi per la misura delle correlazioni : *Bresciani* (*C.*).

April—Osservazioni sul metodo storico in economia : *Arias* (*G.*). La doppia imposta su i debiti e i redditi in Italia : *Griziotti* (*B.*). Sui metodi per la misura delle correlazioni : *Bresciani* (*C.*).

May—L'esercizio 1907-08 delle ferrovie dello stato : *Trevisonno* (*N.*). Intorno al calcolo della ricchezza privata dell' Italia : *Mortara* (*G.*). Sulla curva di distribuzione dei redditi : *Beneduce* (*A.*). Per una nuova questione sociale : *Scarselli* (*B.*).

ITALY—*Contd.*

Riforma Sociale, 1909—

March—April—La sintesi economica di Achille Loria: *Supino* (*Camillo*). L'uomo economico e la cooperazione: *Michels* (*Roberto*). La funzione economica del sovraprezzo, e del premio e la tassazione: *Cabiati* (*Attilio*). Il calcolo della ricchezza privata: *Princivalle* (*Luigi*).

May—June—La teoria generale dell' equilibrio economico: *Sensini* (*Guido*). Ferrovie e finanze in Italia: *Flora* (*Federico*). Programmi, voti ed eletti nei comizi politici del 1909: *Schiavi* (*Alessandro*).

Rivista Italiana di Sociologia. January—February, 1909—Intorno alla evoluzione della proprietà: *Dallari* (*G.*).

SWITZERLAND—

Journal de Statistique Suisse, 1909—

Lief. 3—Bericht über die finanzielle Tätigkeit des Frauenkrankenvereins in Tragen vom 3. November, 1868, bis 30. September, 1907: *Heierle* (*J.*). Volksbestand und -Anwachs in Ausserrhoden seit der Landesteilung, anno 1597: *Schefer* (*Johs*) und *Schefer* (*Hans*).

Lief. 4—Schweizerische Kriminalstatistik für das Jahr 1906: *Béguin* (*Dr. Pierre*). Recherches statistiques sur la nationalité des personnes qui profitent de l'assistance médicale, publique et privée, à Genève: *Dunant* (*Dr. Pierre L.*).

QUARTERLY LIST OF ADDITIONS TO THE LIBRARY.

During the Quarter ended 15th June, 1909, the Society has received the publications enumerated below. The titles are arranged alphabetically by subjects (works of a general nature coming first) under the following heads:—(a) Foreign Countries; (b) India and Colonial Possessions; (c) United Kingdom and its Divisions; (d) Authors, &c.; (e) Societies, &c. (British); (f) Periodicals, &c. (British).

(a) Foreign Countries.

Argentine Republic—

Anuario de la Direccion general de estadística correspondiente al año 1907. Tomos 1, 2, 8vo. 1908	The Director-General of Statistics
Agriculture. Ministerio de Agricultura. Boletín mensual de estadística agricola. (Current numbers.) 8vo. 1909	The Ministry of Agriculture
Buenos Ayres (*Province*). Boletín mensual de la Direccion General de Estadística. (Current numbers.) Fol. 1909	The Provincial Statistical Bureau
Cordoba (*Province*). Anuario de la Direccion general de estadística de la Provincia, año 1907. 8vo. 1908	The Director-General of Statistics
Santa Fé. Boletín de estadística municipal. (Current numbers.) Fol. 1909	The Municipal Statistical Bureau

Austria-Hungary—

Österreichisches Wirtschaftspolitisches Archiv (vormals "Austria"). (Current numbers.) 8vo. 1909	The Ministry of Commerce
Statistische Monatschrift. (Current numbers.) 8vo. 1909	The Central Statistical Commission
Agriculture. Statistische Nachrichten aus dem Gesammtgebiete der Landwirtschaft. (Current numbers.) 8vo. 1909	
—— Statistisches Jahrbuch des k.k. Ackerbau-Ministeriums für 1908. Heft 1. Statistik der Ernte des Jahres 1908. 8vo. 1909	The Government of Austria-Hungary
Births, &c. Bewegung der Bevölkerung im Jahre 1906. Fol. 1908	The Central Statistical Commission
Census. Ergebnisse der gewerblichen Betriebszählung vom 3. Juni, 1902. Heft 1, Abteilung 1. Analytische Bearbeitung. Fol. 1908	The President, Ministry of Commerce
—— Ergebnisse der landwirtschaftlichen Betriebszählung vom 3. Juni, 1902. 3 parts, fol. 1908	
Finance. Mitteilungen des k.k. Finanzministeriums. Jahrg. 14, Heft 3. 8vo. 1908	The Ministry of Finance
Justice. Die Ergebnisse der Strafrechtspflege im Jahre 1906. Fol. 1909	The Central Statistical Commission
Labour. Protokoll der 24. Sitzung des Arbeitsbeirates, 8. Feb. 1909. 8vo. 1909	The Austrian Labour Department
—— Veränderungen im Stande der Gewerbe während der sieben Jahresperioden 1900-01 bis 1906-07. 52 pp., 4to. 1909	
—— Mitteilungen des k.k. Arbeitsstatistischen Amtes im Handelsministerium. (Current numbers.) 8vo. 1909	
Railways. Österreichische Eisenbahnstatistik für das Jahr 1907. Teil 1, Hauptbahnen und Lokalbahnen. La. fol. 1909	The Ministry of Railways

(a) **Foreign Countries**—*Contd.*

Austria-Hungary—*Contd.*

Savings Banks. Statistik der Sparkassen für 1906. Fol. 1909	The Central Statistical Commission
Hungary. Annuaire statistique hongrois. Nouveau cours. Vol. xv. 1907. 8vo. 1909	The Central Statistical Bureau
Bohemia—	
Agriculture. Anbau- u. Erntestatistik sowie Statistik der wichtigsten Zweige der landwirtschaftlichen Industrie für 1907-08. 8vo. 1909	The Statistical Bureau
Mining. Statistik der Erzeugung und des Verbrauches von Kohle im Königreiche Böhmen für 1880, 1885, 1890-1907. 8vo. 1909	
Steiermark—	
Forestry. Die Forst- und Weideservituten in vier Gemeinden Steiermarks. 8vo. 1908	The Registrar-General of England
Savings Banks. Die Sparkassen in Steiermark in 1903 und 1904, nebst Übersichten über die Jahre 1894-1904. 8vo. 1908	
Budapest—	
Statistisches Jahrbuch der Haupt- und Residenzstadt Budapest. 9. Jahrgang, 1906. 8vo. 1908	The Municipal Statistical Bureau
Births, &c. Die Sterblichkeit der Stadt Budapest im Jahre 1906. 8vo. 1908	
Education. Das Unterrichtswesen der Stadt Budapest im Jahre 1905-06 und Statistik der Communalschulen von 1828 bis 1907. 8vo. 1908	
Joint Stock Companies. Bestand und Geschäftsergebnisse der Budapester Actiengesellschaften im Jahre 1906 und Statistik der Actiengesellschaften in 1873-1906. 8vo. 1908	
Monatshefte des Budapester Communal-Statistischen Bureaus. (Current numbers.) 1909	
Wochenausweis des Budapester Communal-Statistischen Bureaus. (Current numbers.) 1909	
Compass. Finanzielles Jahrbuch für Oesterreich-Ungarn. 1909. 42^er^ Jahrgang. 2 vols., 8vo. 1908	The Editor
Das neue Europa. [Published monthly.] April, 1909. 8vo. 1909	The Publishers

Belgium—

Education. Rapport triennal sur l'état de l'enseignement moyen en Belgique. 18^e^ période triennale 1903-04-05. Fol. 1908	The Registrar-General of England
Elections. Statistique du vote plural en Belgique par Maurice Sauveur. 4to. 1908	
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Railways. Chemins de fer, postes, télégraphes, téléphones et marine. Compte rendu des opérations pendant l'année 1906. Fol. 1907	Dr. J. S. Keltie
Brussels. Rapport présenté au Conseil communal par le Collège des Bourgmestre et Échevins. 8vo. 1908 [Contains the general municipal statistics of Brussels for 1907.]	The Registrar-General of England

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Hasselt. Exposé de l'administration et de la situation des affaires communales pendant l'année 1907-08. 8vo. 1908	,,
Académie royale de Belgique—	
Annuaire, 1909. 8vo. 1909	The Academy
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Memoria que presenta el ministro de colonizacíon y agricultura al congreso ordinario de 1907 Fol. 1907	Dr. J. S. Keltie
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Trade. Importação e Exportação. Movimento maritimo, cambial e do café em 1907. Fol. 1909	The Bureau of Trade Statistics
S. Paulo. Saude publica, 1907. 8vo. 1908	The Registrar-General of England
Brazilian Review. (Current numbers.) Fol. 1909	The Editor

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Bulletin mensuel de la Direction générale de statistique du royaume de Bulgarie. (Current numbers.) 4to. 1908	The Statistical Bureau
Trade. Statistique du commerce du Royaume de Bulgarie avec les pays étrangers, mouvement de la navigation et prix moyens des animaux domestiques, &c., pendant 1907. 4to. 1909	

China—

Customs Gazette. (Current numbers.) 4to. 1909	The Inspectorate-General of Customs, Shanghai

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Informe que el superintendente de las rentas públicas presenta al Ministerio de hacienda y tesoro referente al movimiento del Ramo en el año de 1907. 28 pp., fol. 1908	Dr. J. S. Keltie

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Anuario de 1907. Anexo á la memoria de fomento de 1907-08. Tomo undecimo. Fol. 1908	Dr. J. S. Keltie
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Agriculture. Boletín oficial de la Secretaria de agricultura, industria y comercio. (Current numbers.) 8vo. 1909	National Library, Havannah
Finance. Secretaria de Hacienda. Estadística general. Presupuestos municipales. Año fiscal de 1906-07. 4to. 1909	The "Secretaria"

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Communications statistiques. 4e série. Tome 29. 8vo. 1909 [Contains the crop returns for 1907 and earlier years, the income tax returns for 1908-09, the official prices of cereals for 1908, and statistics of primary schools (excluding those in Copenhagen) for 1906.]	The State Statistical Bureau

Egypt—

Births and deaths in the principal towns of Egypt during 1908, classified according to age and diseases. 8 pp., obl. 4to. 1909	The Department of Health
Postal Administration. Annual report for the year 1908. 8vo. 1909	The Administration
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Trade. Le commerce extérieur de l'Égypte pendant 1908. 8vo. 1909	The Director-General of Customs

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Agriculture. Ministère de l'Agriculture. Bulletin mensuel de l'Office de renseignements agricoles. (Current numbers.) 8vo. 1909 —— Statistique agricole annuelle, 1907. 8vo. 1908	The Ministry of Agriculture
Finance. Ministère des Finances. Bulletin de statistique et de législation comparée. (Current numbers.) 8vo. 1909	The Ministry of Finance
—— Budget général de l'exercice 1909. 13 parts, 4to. 1908	Dr. J. S. Keltie
Labour. Enquête sur le travail à domicile dans l'industrie de la lingerie. Tome 2, Cher, Allier, Loir-et-Cher, Indre, Maine-et-Loire, Sarthe. 8vo. 1908	The French Labour Department
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Trade. Commerce de la France. Documents statistiques [mensuels]. (Current numbers.) 8vo. 1909	The Director-General of Customs
Seine (Département). Rapport sur le service des enfants assistés pendant 1906. 4to. 1907	The Registrar-General of England

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British Chamber of Commerce, Paris. Annual Report for 1908. 8vo. 1909	The Chamber
British Chamber of Commerce, Paris. Monthly Circular. (Current numbers.) 4to. 1909	
Algeria. Rapport sur les opérations des sociétés indigènes de prévoyance de secours et de prêts mutuels des communes de l'Algérie pendant l'exercice 1906-07. 8vo. 1908	Dr. J. S. Keltie
Colonies—	
Mines. Statistiques de l'industrie minière dans les colonies françaises pendant 1907. 8vo. 1908	The French Colonial Office
Population. Statistiques de la population dans les colonies françaises pour 1906 suivies du relevé de la superficie des colonies françaises. 8vo. 1909 [The total population, excluding Algeria and Tunis, is 39 million. Of these, 630,000 are French, and the others are foreigners, natives, and half-castes. What proportion of the Frenchmen are in the public service is not readily ascertainable. The area of the colonies is over 7 million square kilometres.]	
Trade. Statistiques du commerce des colonies françaises pour 1907. Tome 3, Colonies de l'Afrique orientale. Tome 4, Colonies d'Asie. 2 vols., 8vo. 1909	

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Statistisches Jahrbuch für das Deutsche Reich. 1906-08. 8vo. 1906-08	Dr. J. S. Keltie
Vierteljahrshefte zur Statistik des Deutschen Reichs. (Current numbers.) 4to. 1909	The Imperial Statistical Bureau
Births, &c. Bewegung der Bevölkerung im Jahre 1907. 4to. 1909 [Gives the statistics of births, deaths, marriages, and the causes of death under 23 heads, and also oversea emigration.]	
Census. Berufs- und Betriebszählung vom 12. Juni 1907. Berufsstatistik. Abteilung 1. Heft 1. 4to. 1909	
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Inland Navigation. Die Binnen-Schiffahrt im Jahre 1907, sowie der Bestand der deutschen Binnenschiffe am 31. Dezember 1907. 4to. 1909	The Imperial Statistical Bureau
Insurance. Amtliche Nachrichten des Reichs-Versicherungsamts. Nr. 3. 15. März, 1909. 4to. 1909 [Contains the general report on the Imperial Insurance Office for 1908.]	The Office
Labour. Beiträge zur Arbeiterstatistik, No. 10. Die Regelung des Arbeitsverhältnisses der Gemeindearbeiter in deutschen Städten. II. 8vo. 1909	The German Labour Department
—— Statistik der Frauenorganisationen im Deutschen Reiche. Fol. 1909	Purchased
—— Streiks und Aussperrungen im Jahre 1908. 4to. 1909	The Imperial Statistical Bureau
Livestock. Die Viehhaltung im Deutschen Reiche nach der Zählung vom 2. Dezember 1907. 4to. 1909 [There are increases in the numbers of all animals except sheep, which still are declining in number. In 1873, there were 25,000,000 sheep in Germany; in 1907, the number was 7,700,000.]	
Municipal. A collection of reports on gas and electric lighting, tramways, &c., of certain German towns. 8vo. and fol. 1903-08	Mr. R. J. Thompson

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—— Deutsches Handels-Archiv. January-December, 1908. 12 parts, 4to. 1908	Dr. J. Scott Keltie
Prussia. Zeitschrift des K. Preussischen Statistischen Landesamts. (Current numbers.) Fol. 1909	The Royal Prussian Statistical Bureau
Saxony— Zeitschrift des K. Sächsischen Statistischen Landesamts. (Current numbers.) 4to. 1909 Statistisches Jahrbuch für das Königreich Sachsen. 37. Jahrgang 1909. 8vo. 1909	The Statistical Bureau of Saxony
Württemberg— Statistisches Handbuch für das Königreich Württemberg. Jahrgang 1906 und 1907. 8vo. 1908 Württembergische Jahrbücher für Statistik und Landeskunde. Jahrgang 1907, Heft 2. Jahrgang 1908, Heft 1. 2 vols., 4to. 1908	Dr. J. Scott Keltie
Berlin— Statistisches Jahrbuch der Stadt Berlin, 1905-07. 2 vols., 8vo. 1907-09	The Right Hon. Ch. Booth, F.R.S.
Statistisches Jahrbuch der Stadt Berlin, 31. Jahrgang, enthaltend die Statistik der Jahre 1906 und 1907 (zum Teil auch 1908). 8vo. 1909 Übersichten aus der Berliner Statistik für 1906 und 1907 (zum Teil auch 1908). 12mo. 1909 Births, &c. Tabellen über die Bevölkerungsvorgänge Berlins im Jahre 1906. 4to. 1908 Prices. Preis-Zusammenstellungen des Statistischen Amts der Stadt Berlin. (Current monthly numbers.) Sheets. 1909	The Municipal Statistical Bureau
Dresden. Monatsberichte des Statistischen Amtes der Stadt Dresden auf das Jahr 1908. 8vo. 1908	The Registrar-General of England
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Actienbaugesellschaft für kleine Wohnungen zu Frankfurt a. M. 19$^{\text{er}}$ Bericht für 1908. 8vo. 1909 Die Bauten der Actienbaugesellschaft . . . 1890-1908. Fol. 1909	The Company
Hamburg. Statistik des Hamburgischen Staates. Heft 23, Ausführung und Ergebnisse der Volkszählung vom 1. Dezember 1905 im hamburgischen Staate. Teil 1. 4to. 1909	The Statistical Bureau
Deutscher Verein für Versicherungs-Wissenschaft. Veröffentlichungen. Heft 16. 8vo. 1909	The Society
Verein für Socialpolitik— Band 119, Teil 1. Preussische Städte im Gebiete des polnischen Nationalitätenkampfes. 8vo. 1909 Band 119, Teil 2. Die Stadt Posen unter preussischer Herrschaft: *Moritz Jaffé.* 8vo. 1909	Purchased
Deutscher Universitäts-Kalender . . . Winter-Semester 1908-09. 2 vols., 8vo. 1908	Dr. J. S. Keltie

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Bulletin trimestriel du commerce spécial de la Grèce. No. 4. 4e Trimestre de 1908. 4to. 1908	The Bureau of Statistics, Ministry of Finance
Bulletin du Ministère des Finances, 3 parts. 8vo. 1908-09. (In Greek)	J. S. Keltie
Italy—	
Agriculture. I campi dimostrativi di concimazione indiretta del frumento. Risultati delle esperienze nel quinquennio 1902-03–1906-07. 8vo. 1909	The Ministry of Agriculture
Emigrazione e Colonie. Raccolta di rapporti dei rr. agenti diplomatici e consolari. Vol. 3, America. Parte 2, Argentina. 8vo. 1908	The Commissioner of Emigration
Finance. Bollettino di statistica e di legislazione comparata. 1907-08, Fasc. 5. 1908-09, Fasc. 1, 2. 8vo. 1908-09	Dr. J. S. Keltie
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Labour. Dati statistici sul mercato del lavoro in Agricoltura nel 1905. Fol. 1906	The Italian Labour Department
—— Inchiesta sul lavoro notturno dei fornai. Fol. 1906	
—— Massimario della giurisprudenza dei probiviri. Introduzione, ordinamento e chiose dell' avv. dott. Enrico Redenti. Fol. 1906	
—— Organizzazioni di lavoratori in Italia. Federazioni di mestiere 1. La federazione dei cappellai. Fol. 1906	
—— Organizzazioni di lavoratori in Italia. Federazioni di mestiere 2. La federazione edilizia. Fol. 1906	
—— Saggio bibliografico degli articoli contenuti in riviste italiane e straniere sulle questioni del lavoro. Anno 2—4, 1905-07. 3 vols., 8vo. 1906-08	
—— Bollettino [mensile] dell' Ufficio del lavoro. July, 1907—March, 1909. 21 parts, 8vo. 1907-09	
—— Correnti periodiche di migrazione interna in Italia durante il 1905. Fol. 1907	
—— Lavoratori delle miniere. Parte prima. Eta, famiglia, morbilità, occupazione, reddito. Fol. 1907	
—— Salari ed orari nei lavori edilizi, stradali, idraulici e di bonifica (anno 1906). Rilevazione eseguita per mezzo degli uffici del Genio civile. Fol. 1907	
—— Statistica degli scioperi avvenuti in Italia nell' anno 1904-05. 2 vols., fol. 1907-08	
—— Inchiesta sulle abitazioni degli impiegati d'ordine e subalterni in Roma e del personale ferroviario in Roma e in altre città d'Italia. Dati demografici ed economici sugli impiegati d'ordine e subalterni in Roma. Fol. 1908	
—— Notizie sulle variazioni dei salari e degli orari nell' industria serica italiana dal 1901 al 1907. Fol. 1908	
—— Operai ed orari negli opifici soggetti alla legge sul lavoro delle donne e dei fanciulli (anno 1907). Fol. 1908	

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Navigation. Movimento della navigazione del Regno d'Italia nell' anno 1907. Parts 1 and 2 of vol. 1. Fol. 1909	The Direzione-Generale delle Gabelle
Trade. Tabella indicante i valori delle merci nell' anno 1908 per le statistiche commerciali. 8vo. 1909	The Ministry of Finance
Turin. La vita amministrativa del comune di Torino nel quinquennio 1903-08. Vol. 1. 8vo. 1909	The Municipality
Società Umanitaria, Milano. Disoccupazione collocamenti sussidi in Milano, nel 1908. 65 pp., 8vo. 1909	The Society

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Résumé statistique de l'Empire du Japon. 23ᵉ année. La. 8vo. 1909	The Bureau of General Statistics
Agriculture. 24th Statistical Report of the Department of Agriculture and Commerce. 8vo. 1909	The Department
Births, &c. Mouvement de la population de l'Empire du Japon pendant 1906. (Nombre absolu et proportion.) La. fol. 1909	The Bureau of General Statistics
—— Statistique des causes de décès de l'Empire du Japon pendant 1906. (Nombre absolu et proportion.) La. fol. 1909	
Finance. Monthly Journal of the Monopoly Bureau of the State Department of Finance. Tokio. (In Japanese.) 8vo. 1909	The Bureau

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Finance. Boletín de Estadística fiscal. Año fiscal de 1907-08. Fol. 1909	The Director-General of Statistics
—— Estadística fiscal. Datos relativos. (Current numbers.) Fol. 1909	

Netherlands—

Revue mensuelle du Bureau Central de Statistique. (Current numbers.) 8vo. 1909	The Central Statistical Bureau
Navigation. Statistiek van de Zeescheepvaart over het jaar 1907. Gedeelte 3, Vrachtvaart. La. 8vo. 1908	The Ministry of Agriculture
Prisons. Statistique pénitentiaire des Pays-Bas pour 1907. 4to. 1909	The Central Statistical Bureau
Amsterdam. L'assistance à Amsterdam 1906 et 1907. 8vo. 1909	The Registrar-General of England

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Annuaire statistique de la Norvège. 28ᵉ année 1908. 8vo. 1908	The Central Statistical Bureau
Journal du Bureau Central de Statistique. 26ᵉ année 1908. 8vo. 1909	
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Education. Statistique de l'instruction publique pour 1905. 8vo. 1908. (73)	
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Industries. Statistique industrielle pour 1901-04. 8vo. 1908. (77)	
Lunacy. Statistique des hospices d'aliénés pour 1907. 8vo. 1909. (78)	
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Annuaire statistique de la Roumanie. 8vo. 1909 Moniteur commercial Roumain. Organe officiel du Ministère de l'industrie et du commerce. (Current numbers.) Fol. 1909 Agriculture. Poids qualitatif et corps étrangers du blé (Récolte 1908). La. 8vo. 1908 Labour. Enquête sur les artisans et l'application de la loi pour l'organisation des métiers. 1^e Partie. 4to. 1909	The Ministry
Russia—	
Annuaire de la Russie. 1906 et 1907. 2 vols., 8vo. 1907-08	Major P. G. Craigie, C.B.
Annuaire du Ministère des Finances. Année 1907-08. 8vo. 1909. (In Russian)	The Ministry of Finance
Trade. Commerce extérieur de la Russie par la frontière d'Europe. Exercice du mois de Décembre mis en regard avec celui de toute l'année 1908. Fol. 1909	The Department of Customs
Prices of grain at ports. Return (in Russian). Sheets. (Current numbers.) 1909	The Ministry of Finance
Finland—	
Annuaire statistique de Finlande. Nouvelle série. 6^e année, 1908. 8vo. 1908 Births, &c. Mouvement de la Population de Finlande en 1905 et 1906. 8vo. 1908 Poor relief. Assistance publique des communes de la Finlande en 1905. 8vo. 1908 Shipping. Sjöfart. Finlands Sjöfart på Ryssland och utrikes orter, år 1907. 8vo. 1908 Trade. Handel. Finlands Handel på Ryssland och utrikes orter samt Uppbörden vid Tullverket år 1907. 8vo. 1908	The Central Statistical Bureau
Statistical returns dealing with Education, Emigration, Industries, Labour, Forestry, Monts de piété. 9 vols., 8vo. 1908	The Registrar-General of England
Société de Géographie de Finlande—	
Atlas de statistique sociale sur les communes rurales de Finlande en 1901. La. fol. 1908 Enquête sur l'économie sociale dans les communes rurales en Finlande, 1901. III. Étendue des terres cultivées et leur répartition. 8vo. 1908 Fennia. Nos. 23—27. Bulletin de la Société de Géographie de Finlande. 5 vols., 8vo. 1905-09	The Society

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Bulletin hebdomadaire du Bureau de Statistique. (Current numbers.) 4to. 1909	The Municipal Statistical Bureau
Bulletin mensuel du Bureau de Statistique. (Current numbers.) 4to. 1909	
Relevé préliminaire des données statistiques sur la ville de St. Pétersbourg pour 1908. 4to. 1909	
Kazan University. Bulletin. (Current numbers.) (In Russian.) 8vo. 1909	The University
Moscow—	
Bulletin statistique mensuel de la Ville. (Current numbers.) 8vo. 1909	The Municipal Statistical Bureau
Bulletin récapitulatif de la ville de Moscou. Année 1908. 8vo. 1909	
Promyshlennost (Industry). (Current numbers.) 4to. 1909. (In Russian)	The Editor

Salvador—

Estudios estadísticos Ia. serie 1907-08. Estudios estadísticos respecto á las riquezas naturales, industrias y comercio de la república de el Salvador. 50 pp., 8vo. 1907-08	Dr. J. S. Keltie

Spain—

Army. Ministerio de la guerra. Resumen de la estadística sanitaria del ejercito español. Año 1906. 4to. 1908	The Ministry of War
Coasting Trade. Estadística general del comercio de cabotaje en 1907. 4to. 1909	The Director-General of Customs
Finance. Estadística del impuesto de transportes por Mar, &c. No. 35. Año 1908. No. 36. Primer Trimestre de 1909. 8vo. 1909	

Sweden—

Bidrag till Sveriges Officiella Statistik—	
A. Befolkningsstatistik, 1906. (Births, &c.) 4to. 1909	The Central Statistical Bureau
D. Fabriker och Handtverk, 1907. (Factories.) 4to. 1909	
G. Fångvården, 1907. (Prisons.) 4to. 1908	
P. Undervisningsväsendet, 1905-06. (Education.) 4to. 1909	
Q. Statens Domäner, 1907. (Forests.) 4to. 1909	
V. Branvins tillverkning, &c., 1907-08. (Distilleries, &c.) 4to. 1909	
Y. Sparbanksstatistik, 1907. (Post Office Savings Banks.) 4to. 1909	
Statistisk Tidskrift. No. 3, 1908. Nos. 2 and 3, 1909. 3 parts, 8vo. 1908-09	
Banks. Sammandrag af de enskilda sedelutgifvande bankernas. (Current numbers.) 1909	
—— Sammandrag af Riksbankens Ställning. (Current numbers.) 1909	
—— Öfversikt af Sveriges Riksbanks Ställning, 1908. Fol. 1909	
—— Sveriges Riksbank, 1908. Årsbok utarbetad af Riksbankens Statistiska Afdelning. Årg 1. 4to. 1909	

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Emigration. In- och utvandring, år 1908. 15 pp., 4to. 1909	The Central Statistical Bureau
Labour. Meddelanden fran k. Kommerskollegii Afdelning för Arbetsstatistik. (Current numbers.) 8vo. 1909	
—— Arbetsstatistik. A. 7. Undersökning af Tryckerier och därmed förenad handtering i Sverige. 8vo. 1909 [A report on hours of labour, wages, &c., of employees in the printing and allied trades.] (Another copy presented by the Swedish Labour Department.)	University of Upsala
—— Arbetsstatistik. A. 8. Utländska Jordbruksarbetare in Sverige, år 1907. 8vo. 1909 [A report on social condition of foreign agricultural labourers in Sweden.]	The Swedish Labour Department
—— Arbetsstatistik. B. 5 and 6. Registrerade sjukkassors verksamhet år 1905 and 1906. 2 vols., 8vo. 1908 [Gives statistics of Provident Sick Funds for 1905 and 1906.]	University of Upsala
—— Arbetsstatistik. D. 1. Lifsmedels-, och Bostadspriser i Sverige under åren 1904-07. 8vo. 1909 [A report on prices of food and of live stock in 1904-1907; also statistics of rents and of prices paid for board and lodging by the working classes during the same period. The statistics show that there has been a large increase in the cost of living in Sweden.] (Another copy presented by the Swedish Labour Department.)	
—— Arbetsstatistik. E 1. Arbetsinställelser under åren 1903-07. 8vo. 1909 [A report on strikes in 1903 to 1907. There were 1,148 strikes and lockouts during the period in question, affecting nearly 112,000 workers, who lost 4,400,000 days' work in consequence.] (Another copy presented by the Swedish Labour Department.)	
Population. Uppgift å folkmängden inom hvarje Kommun, &c., den 31 Dec. 1908. 18 pp., 4to. 1909	The Central Statistical Bureau
Trade. Interskandinavisk Handelsomsättning åren 1900—1906 på grundval af de tre nordiska Ländernas officiella Handelsstatistik. 8vo. 1909	
—— Sveriges Utförsel och Införsel, år 1908. I. Utförseln. 8vo. 1909	

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Bulletin mensuel du Bureau de Statistique de la ville. (Current numbers.) 8vo. 1909	The Municipal Statistical Bureau
Annuaire statistique de la ville de Stockholm pour 1907. La. 8vo. 1909	
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Births, &c. Mouvement de la population de la Suisse pendant 1907. 4to. 1909	The Federal Statistical Bureau
Trade. Statistique du Commerce de la Suisse. Importation et exportation des principaux articles. 4ᵉ trimestre et année 1908. Fol. 1909	The Federal Department of Customs
Bern (*Canton*). Landwirtschaftliche Statistik des Kantons Bern für 1906 und 1907. 8vo. 1909	The Registrar-General of England

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Ottoman public debt. Special report on Ottoman public debt with translation of annual report of Council of administration for twenty-fifth financial period (14th March, 1906, to 13th March, 1907). 8vo. October, 1907	Dr. J. S. Keltie
Crete. Statistique du commerce extérieur (de l'île de Crète). (Mouvement commercial du 1er Janvier à fin Décembre.) 1906. 4to. 1907	

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Agriculture, Department of. Crop reporter. (Current numbers.) 4to. 1909	The Department
Census Bureau. Mortality statistics, 1907. Eighth Annual report. 4to. 1909	The Bureau of the Census
Commerce and Finance. Monthly summary. (Current numbers.) 4to. 1909	Department of Commerce and Labor
Customs Tariff. Bureau of Manufacturers. Tariff series, No. 20, Export tariffs of foreign countries. No. 21, Foreign tariffs on petroleum and petroleum products. 2 parts, 8vo. 1909	The Bureau of Manufacturers
Education. Report of Commissioner of Education for year ended 30th June, 1908. Vol. 1, 8vo. 1908	The Bureau of Education
Finance. Monthly statements of public debt and cash in Treasury. (Current numbers.) Sheets. 1909	The Secretary of the Treasury
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—— Annual report of Comptroller of Currency for year ended 31st October, 1908. 8vo. 1908	The Comptroller of the Currency
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Thom's Official Directory for 1907. 8vo. 1907	Dr. J. S. Keltie
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GREAT BRITAIN'S CAPITAL INVESTMENTS *in* OTHER LANDS.

By GEORGE PAISH.

[Read before the Royal Statistical Society, 15th June, 1909.
The Rt. Hon. Sir CHARLES W. DILKE, Bart., M.P., President, in the Chair.]

FOR some years past unusual attention has been paid to questions concerning the extent of the nation's wealth, the amount of the national income and the sources from which that income is derived. The discussions of these questions have brought into prominence the relatively meagre amount of information available concerning them. Fortunately we have one source of information of great value—the incomes assessed to income tax. From this datum it is possible to calculate with a fair degree of accuracy the extent of the national wealth, its growth from period to period and the income derived therefrom.

Information about incomes assessed to income tax is, as you all know, contained in the Report of the Commissioners of Inland Revenue. This document is of such great value to students of the progress of the nation that those of us who constantly study its pages desire to see the data contained therein greatly amplified. One of the objects of this paper is to indicate one direction in which the information could be extended without difficulty and with great advantage.

The investors of this country have, during the past three centuries, placed several thousand millions of capital in other lands, and the capital thus placed abroad yields a great annual income to the country. The Commissioners of Inland Revenue recognise the importance of the matter, and set out in detail the amount of income derived from certain of our capital investments in other lands; but their statement is far from comprehensive, and it is with the double object of drawing attention to the matter and of endeavouring to give a more complete statement that I have undertaken to read this paper.

The Commissioners give particulars of the income which our investors draw from their holdings in government bonds—Indian, colonial and foreign. Their statement is an interesting one and I append it below:—

✓ *Income of British investors from capital lent to Indian, colonial and foreign governments.*

Countries, etc.	Amount of dividends and annuities charged to Income Tax.
Indian :—	
	£
India Government stocks and loans	4,204,278
Indian Guaranteed Railways	4,531,871
Bettiah Raj and other similar State loans	32,088
Total—Indian	8,768,237
Colonial, &c., viz. .—	
Antigua	4,134
Bahamas	1,662
Barbados	13,352
British Guiana	19,762
British Honduras	1,305
Canada	1,487,744
Cape Colony	1,462,122
Ceylon	155,243
Dominica	2,475
Fiji	3,623
Gold Coast	26,422
Grenada	4,947
Hong Kong	37,936
Isle of Man	8,189
Jamaica	103,128
Lagos	69,536
Mauritius	45,942
Montserrat	425
Natal	679,930
Newfoundland	138,130
New South Wales	2,266,480
New Zealand	1,829,719
Queensland	1,281,719
St. Kitts	2,716
St. Lucia	6,808
Sierra Leone	46,144
South Australia	863,543
Straits Settlements	3,062
Tasmania	294,768
Transvaal	906,836
Trinidad	37,870
Victoria	1,609,387
West Australia	514,663
Zanzibar	3,000
Total—Colonial	13,932,722

Countries, etc.	Amount of dividends and annuities charged to Income Tax.
Foreign, viz. :—	
Europe :	£
Austria-Hungary	74,171
Belgium	385
Bulgaria	30,266
Denmark	28,432
Germany	44,541
Greece	139,425
Italy	124,927
Netherlands	3,797
Norway	44,410
Portugal	40,075
Russia	429,908
Servia	686
Spain	75,402
Sweden	76,913
Switzerland	1,392
Turkey	353,125
Total—Europe	1,467,855
Asia—	
China	869,004
Japan	1,617,361
Siam	30,228
Total—Asia	2,516,593
Africa—	
Egypt	507,504
Liberia	3,245
Total—Africa	510,749
America—	
Argentine Republic	1,357 563
Brazil	992,410
Chili	614,811
Colombia	66,485
Costa Rica	383
Cuba	59,191
Ecuador	2,071
Guatemala	238
Mexico	294,331
Nicaragua	9,171
Paraguay	8,623
Peru	1,596
Salvador	36
Uruguay	372,185
Venezuela	63,833
Total—America	3,842,927
,, —Foreign	8,338,124

SUMMARY.	£
Indian	8,768,237
Colonial	13,932,722
Foreign	8,338,124
TOTAL	31,039,083

A supplementary table showing in a condensed form the assessments on the income from Indian, colonial, and foreign Government securities is also given in the report of the Commissioners.

✓ Year.	Indian.	Colonial.	European.	Asiatic.
	£	£	£	£
1897-98	8,168,258	10,812,176	1,563,344	728,595
'98-99	8,258,820	11,079,341	1,675,417	1,003,911
'99-1900	8,281,704	11,275,965	1,689,960	1,226,803
1900-01	8,567,639	11,529,608	1,613,042	1,333,100
'01-02	8,880,908	11,832,716	1,552,083	1,304,208
'02-03	9,048,777	12,369,514	1,486,178	1,324,585
'03-04	8,695,929	12,869,426	1,435,232	1,445,560
'04-05	8,760,185	13,553,540	1,324,476	1,651,687
'05-06	8,862,807	13,906,601	1,307,106	2,454,268
'06-07	8,768,237	13,932,722	1,467,855	2,516,593

Year.	African.	American.	Total.
	£	£	£
1897-98	691,360	3,410,459	25,374,192
'98-99	703,621	3,771,139	26,492,249
'99-1900	736,435	3,465,227	26,676,094
1900-01	655,477	3,554,183	27,253,049
'01-02	631,003	3,925,878	28,126,796
'02-03	620,598	4,134,768	28,984,420
'03-04	579,331	3,933,523	28,959,001
'04-05	574,054	3,777,080	29,641,022
'05-06	541,986	3,859,299	30,932,067
'06-07	510,749	3,842,927	31,039,083

Thus the British people are receiving an income of upwards of 31,000,000*l.* a year from their loans to Indian, colonial, and foreign governments. The income from this source has rapidly expanded in recent years in consequence mainly of new loans to our colonies and to our ally Japan. It will be noted that our investments in the loans of continental countries are tending to decline. This tendency may be checked if events cause the British market for capital to be again opened freely to Russian borrowings. That country needs to raise capital from year to year for the extension of its railway system.

Beyond setting out the income derived from loans to the Indian, the colonial and foreign governments, the Commissioners of Inland Revenue ascertain and set out the income we derive from—

(1.) "Indian, colonial and foreign securities,"
(2.) "From coupons,"
(3.) "From railways out of the United Kingdom."

The income from the first of these is 16,017,000*l*, from the second 13,767,000*l*., and from the third 18,736,000*l*., making a total of 48,521,000*l*.

The Commissioners add this income to that received from Government loans, and summarise the whole as follows:—

	£
Income disclosed by agents for payment of interest on foreign and colonial government securities	31,039,083
Income disclosed by agents for payment of dividends and interest of foreign and colonial companies and corporations	15,568,813
Income disclosed by bankers and coupon dealers in connection with the realisation of foreign and colonial coupons	13,767,315
Income declared by persons, firms, or public companies as received in respect of investments abroad without taxation at the hands of agents, bankers, or coupon dealers	6,947,482
Profits of those railways abroad which are owned and worked by British *companies* with the seat of management in the United Kingdom	12,237,423
Total..	79,560,116

Further, the Commissioners compare this total of nearly 80,000,000*l*. with the income received from similar sources in previous years since 1886-87.

Income of British investors from Indian, colonial, and foreign government bonds and stocks, municipal stocks, and railway securities

1 Year.	2 India Government stocks, loans, and guaranteed railways.	3 Colonial and foreign Government securities.	4 Colonial and foreign securities (*other* than Government) and possessions, "coupons" and railways out of the United Kingdom, other than those included in column 2.	5 Total.
	£	£	£	£
1886-87........	7,793,097	16,243,321	20,471,584	44,508,002
'87-88........	7,972,606	16,757,736	22,248,029	46,978,371
'88-89.......	8,026,310	17,388,562	24,584,936	49,999,808
'89-90.... ..	7,811,310	17,528,582	26,970,320	52,310,212
'90-91........	8,028,524	16,608,700	30,851,608	55,488,832
'91-92........	7,784,370	14,949,017	31,995,383	54,728,770
'92-93........	7,790,642	15,333,817	32,046,043	55,170,502
'93-94........	7,856,721	15,950,233	31,311,075	55,118,029
'94-95........	8,021,797	15,927,769	29,556,692	53,506,258
'95-96.......	8,019,720	16,419,933	30,461,426	54,901,079
'96-97........	8,065,866	16,790,472	31,462,629	56,318,967
'97-98.......	8,168,258	17,205,934	31,265,474	56,639,666
'98-99........	8,258,820	18,233,429	33,217,654	59,709,903
'99-1900....	8,281,704	18,394,390	33,590,792	60,266,886
1900-01........	8,567,639	18,685,410	33,078,476	60,331,525
'01-02.......	8,880.908	19,245,888	34,432.683	62,559,479
'02-03........	9,048,777	19.935,643	34,844,295	63,828,715
'03-04........	8,695,929	20,263,072	36,906,305	65,865,306
'04-05	8,760,185	20,880,837	36,421,087	66,062,109
'05-06........	8,862,807	22,069,260	42,967,198	73,899,265
'06-07........	8,768,237	22,270,846	48,521,033	79,560,116

The Commissioners are careful to point out that this income from capital invested abroad is by no means the total received. They say:

"Beyond this earmarked figure there exists a large amount of "income from abroad which in many cases cannot (in the absence of "details which the taxpayer alone could furnish) be identified as such "in the assessments and which is therefore included in the sum of "373,057,495*l.* appearing under the head of 'Businesses, professions, &c., not otherwise detailed.' The fact that this unidentified "income from foreign countries and British colonies and possessions "is of some magnitude will be appreciated when it is considered that "it includes the profits derived from the following sources":—

"Concerns (other than railways) situate abroad but having their "seat of direction and management in this country, *e.g.*, mines, gasworks, waterworks, tramways, breweries, tea and coffee plantations, "nitrate grounds, oil fields, land and financial companies, &c."

"Concerns jointly worked abroad and in this country, such as "electric telegraph cables, and shipping."

"Foreign and colonial branches of banks, insurance companies, "and mercantile houses in the United Kingdom."

"Mortgages of property and other loans and deposits abroad "belonging to banks, insurance companies, land, mortgage and "financial companies, &c., in this country."

"Profits of all kinds arising from business done abroad by "manufacturers, merchants, and commission agents resident in the "United Kingdom."

In brief, the income which the Commissioners earmark as coming from abroad is that received from Indian, colonial and foreign government stocks, municipal securities and railways, and the great additional income the country derives from its investments in a vast number of miscellaneous undertakings of all kinds is excluded.

Before proceeding farther, may I digress for one moment in order to direct your attention to the expansion in the income from capital invested abroad that is earmarked by the Commissioners? I have already indicated the governments to which we have lent large sums in recent years. The income contained in column 4 of the foregoing tabular statement is derived partly from municipal stocks and partly from railways, chiefly the latter, and the immense expansion has arisen mainly from the very large amounts of capital we invested in the railway undertakings of the United States, of Argentina, of Canada, of Mexico and of other countries in the eighties and early nineties. A great deal of the capital we then placed abroad was for several years relatively unproductive in consequence of the severe trade depression in the new countries during the nineties. The expansion in trade of recent years, especially in the agricultural countries, has brought with it large profits for the railways and a greatly increased income for the investors of this country. You will recollect that a few years ago many of the railways of the United States, of Canada and of Argentina and of other countries paid no dividends whatever on their share capitals and that in recent years many of these railways have paid dividends of 7 per cent.—hence the great expansion in income we have derived. In a small degree the expansion in the income shown to have occurred in 1905 and 1906 was the result of fresh investments of capital, a new period of active investment of British capital in other lands having commenced in the summer of 1904.

To return.—It is impossible for anyone to ascertain the income from the capital our merchants, our manufacturers, and others have privately placed abroad, but it is possible to collect a great deal of information in addition to that compiled by the Commissioners.

There are several thousand public companies operating abroad that have raised capital publicly in this country, and these companies issue statements of their capital and of their profits.

To amplify the statement of the Commissioners, I have obtained the reports of as many of these companies as it is possible for a private person to secure. I have classified them, and have ascertained the amount of their capital and of their profits in the aggregate and by groups.

Further, I have sought to analyse the income of 79,000,000*l*. which the Commissioners have earmarked, in order to obtain a comprehensive picture both of the sources of the income we receive and of the capital publicly subscribed in this country for investment in other lands.

I will now set out the results of my investigations as regards income, and will leave the question of the amount of capital we have embarked abroad to a later stage, in order not to create confusion.

The income derived from Indian government loans issued and held in this country is 5,017,000*l*., from colonial government loans 13,933,000*l*., from foreign government loans 8,338,000*l*.

Beyond lending to governments, we have lent large sums to municipalities. Our income from this source is 2,500,000*l*., of which 1,500,000*l*. is derived from colonial and 1,000,000*l*. from foreign cities. The latter include a number of South American municipalities growing rapidly in population, notably Rio de Janeiro, Buenos Ayres, Montevideo, Rosario and Santa Fé. We have also lent money to several cities in the United States, to the city of Mexico and to several Japanese towns.

In providing capital for railway construction this country has performed a great work. Most of the loans to colonial governments have been for railway construction, the major part of India's indebtedness to us is for railways, and a portion of the loans we have made to foreign governments has been used for a similar purpose. But beyond the money for railway construction which we have supplied to governments, we have formed a great many companies to construct and work railways in other lands.

From the capital we have supplied to railway companies working in the colonies, notably in Canada, we receive an income of 7,600,000*l.* a year, from those working in India we derive nearly 4,800,000*l.* per annum. The railways of Argentina, Brazil, Uruguay, Mexico, Chili and other foreign countries yield over 13,000,000*l.* a year to us in the aggregate, and from the railways of the United States our investors receive no less than 27,000,000*l.* a year.

The aggregate of these totals which I have compiled from the companies' reports and as far as possible from independent investigations amounts to 82,777,000*l.*, and slightly exceeds the sum of 79,560,000*l.* returned by the Commissioners of Inland Revenue.

This brings me to the great income we derive from the vast number of miscellaneous companies for which we have provided capital and which largely contribute to the production of the world's supplies of natural wealth. I have taken out the income of 2,172 of the miscellaneous companies the capital of which has been supplied by our investors and I have ascertained the great income that comes to this country for interest and profit upon this capital. The income we derive from capital invested in colonial and foreign banking companies is over 7,000,000*l.* The major portion of this comes from banks doing business in India and the colonies, but a substantial income comes from banks operating in Egypt, China, South America and Mexico.

Breweries and distilleries yield an annual income of only 732,000*l.* a year—an insignificant sum having regard to the amount of capital invested. Our investors appear to have burnt their fingers rather badly in the prices they paid for foreign breweries.

In consequence mainly of the Treasury investment in the shares of the Suez Canal Company, the income from canals and docks situated abroad reaches 1,174,000*l.* a year.

Commercial and industrial companies yield an income of nearly 5,000,000*l.* a year. It must not be supposed that this income is derived from manufacturing firms competing with British traders. One of the most noteworthy characteristics of the British investor is his objection to place capital in any enterprise, or in any country for the matter of that, the development of which appears to be against the interests of the Motherland.

From electric lighting and power companies we derive an income of 321,000*l.*

The income received from financial, land and investment companies amounts to over 6,000,000*l.* a year, and will probably show great expansion in future. A large sum of money has been expended upon the acquisition and development of land in various parts of the world which at present gives no return, and the income from this capital has yet to be received. The income from this source is derived as to two-thirds from the colonies, and as to one-third from foreign countries.

Gas companies bring to us an income of nearly 1,200,000*l.*

Colliery and iron ore undertakings yield 500,000*l.* a year. Having regard to the new capital placed in these undertakings in South Africa, in Australia, in India and elsewhere, this source of income should largely expand.

Gold, copper, diamond, silver, lead, tin and other mining enterprises yield an income of nearly 26,000,000*l.* a year. Of this large figure gold mining comes easily first with a return of nearly 15,000,000*l.* a year, copper second with over 5,000,000*l.* a year, diamonds and other precious stones third with 4,400,000*l.* a year, while silver, lead, zinc, tin, &c., produce an income of 1,100,000*l.* In consequence of the new capital embarked in mining companies and which has not yet become productive a large expansion in our income from mining may be looked for.

Nitrate companies yield an income of 1,600,000*l.*

Oil companies produce profits of 642,000*l.* per annum notwithstanding the misfortunes of the Russian oil companies in which a relatively large sum is placed.

Rubber companies give 446,000*l.* a year, a return which will largely increase as the new plantations mature.

Tea and coffee plantation companies, mainly tea, situated in India and Ceylon, yield a profit of 1,794,000*l.* per annum.

Transmarine cable companies and colonial and foreign telephones yield upwards of 2,000,000*l.* a year.

Tramways give an income of 1,809,000*l.*, and waterworks over 400,000*l.* a year.

In the aggregate, British investors receive an income of nearly 58,000,000*l.* from the miscellaneous companies the accounts of which I have analysed. This income is referred to, but is not disclosed by the report of the Commissioners of Inland Revenue.

Thus, if the Commissioners were to bring together all the income of companies trading abroad and distributing interest and profits in this country, the total would be about 140,000,000*l.*

This great sum does not include the interest upon money deposited in Indian, colonial and foreign banks by persons residing in this country, or the large amount of income derived from capital privately placed abroad, amounting to several hundred millions of pounds.

On the other hand, it is essential to recollect that foreign investors draw a good deal of income from capital placed in British companies of one kind and another, and in balancing the account it is essential not to omit this important offset.

I have taken no account of the profit on the capital invested in our mercantile marine. The country's income from shipping is an inquiry of great magnitude and of great importance and one which could not be advantageously dealt with in this paper.

The capital invested.

This brings me to the second stage of my inquiry. How much capital have the British people placed in other lands to yield them their great income of 140,000,000*l.* a year? Two considerations have to be heeded in this matter. The first is that capital, other than that placed in loans, rarely becomes fully productive until several years after it is expended. Indeed, only in recent years has the capital invested in the eighties and nineties yielded its full harvest of interest and profit.

The income received in 1907-08 did not correspond to the capital expended at that time. Probably the corresponding income will not be realised until some time during the decade ending with 1920. By that time the new lines of railway will become self-supporting, new mines will be fully opened up, new rubber plantations will be yielding their harvest, and so on.

The second is that the capital we have sent abroad does not necessarily correspond to the capital possessed by this country in other lands. On the one hand, we sometimes make bad investments, but on the other we more often find very good ones, and on balance the securities purchased ultimately possess a greater value than the price paid for them. A noteworthy instance of this is the nation's purchase of Suez Canal shares. The sum paid for these shares was 4,076,565*l.*, and their current value is 33,730,000*l.* Doubtless many other instances will occur to you. There can be no doubt that in spite of our losses the value of the capital in other lands which the country now possesses is much greater than the capital actually remitted by our investors.

To obtain an income from abroad of nearly 140,000,000*l.* per annum we have invested a sum of about 2,700,000,000*l.*, and this capital is yielding an all round return of 5·2 per cent.

I have no doubt that as soon as the large amount of capital sent out in recent years bears more fruit the annual income from our foreign investments will reach a much greater figure. Indeed, having regard to the investment of capital in Canada, in Argentina, in India, in the United States, and in other lands in the last few years and the additional sums likely to be sent out in the next few years, I look forward to a very rapid growth in our income from interest and profits on capital invested abroad.

The nature of our investments, the capital placed in each group, the income obtained and the yield returned are shown in the statement on p. 475.

Of this total of about 2,700,000,000*l*. nearly 1,700,000,000*l*. has been expended upon railway construction either by companies or by governments which have raised loans in this country for that purpose.

The capital has been supplied in about equal portions to the countries beyond the seas within the British Empire and to foreign lands. The totals are 1,312,000,000*l*. to India and the colonies, and 1,381,000,000*l*. to foreign states, mainly to the United States, to Central and South America, to Japan and to China. The sums invested (1) in India and the colonies, and (2) in foreign countries are shown in the statement on p. 476.

The capital and income contained in the following statements are compiled from reports covering the year 1907, and in some cases the early portion of 1908. Before the close of the current year (1909) the total will probably reach 3,000,000,000*l*.

In the twelve months to June, 1908, the new capital subscribed in this country for India, for the colonies and for foreign countries amounted to 110,000,000*l*. and in the period from 1st July, 1908, to 30th June, 1909, the additional capital subscribed has reached no less than 175,600,000*l*.[1] This makes a total of no less than 286,000,000*l*. subscribed in the last two years.

For a period of enterprise similar to that through which we are now passing, we have to go back to the later eighties, when we were investing vast sums in the Australasian Colonies, in the United States, in Argentina, in India, in Canada, and in other lands. At that time the country was not nearly as wealthy, nor were its annual savings available for investment in securities nearly as great. Nevertheless, in the seven years from 1884 to 1890, inclusive, we placed abroad over 400,000,000*l*. of capital. In the seven years from 1898 to 1904—a period of extravagance and war expenditures in this country—our investments in other lands were not much over 100,000,000*l*. Since 1904 we have been endeavouring to make up for lost time, and in four and a half years we have placed no less than 400,000,000*l*. of new savings in profitable Indian, colonial and foreign securities. There are good prospects that in the seven years from 1905 to 1911 inclusive we shall place new capital in other lands to the extent of at least 700,000,000*l*., or an average of about 100,000,000*l*. a

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[1] Since the Paper was read, the author has brought the amounts of capital raised in 1908-09 up to the end of June, 1909. At the time the Paper was read they were up to 14th June only.

British capital invested in Indian, colonial, and foreign loans and companies, and the income derived therefrom in 1907-08.

	Capital.	Income.	Rate of Interest.
	£	£	Per cent.
Indian government loans, including rupee loans held in England	156,369,000	5,017,000	3·21
Colonial and provincial government loans	375,190,000	13,933,000	3·71
Foreign government loans	167,000,000	8,338,000	4·75
Colonial and foreign municipal stocks	58,901,000	2,650,000	4·5
Indian railways	123,341,000	4,774,000	3·87
Colonial railways	188,950,000	7,598,000	4·0
American railways	600,000,000	27,000,000	4·5
Foreign railways	286,700,000	13,467,000	4·7
Banks	54,101,000	7,353,000	13·6
Breweries and distilleries	17,205,000	732,000	4·2
Canals and docks	5,974,000	1,174,000	19·6
Commercial, industrial, &c.	77,610,000	4,863,000	6·3
Electric lighting and power	7,686,000	321,000	4·2
Financial, land and investment	187,027,000	6,233,000	3·3
Gas	16,419,000	1,194,000	7·3
Mines—			
Coal and iron ore	12,956,000	505,000	3·9
Copper	38,525,000	5,074,000	13·2
Diamonds and other stones	14,646,000	4,468,000	30·5
Gold	161,178,000	14,947,000	9·3
Silver, lead, and zinc	10,513,000	843,000	8·0
Tin and miscellaneous	5,568,000	308,000	5·5
Nitrate	10,903,000	1,637,000	15·0
Oil	14,268,000	642,000	4·5
Rubber	5,433,000	446,000	8·2
Tea and coffee	21,399,000	1,794,000	8·4
Telegraphs and telephones	34,235,000	2,233,000	6·5
Tramways	35,289,000	1,809,000	5·1
Waterworks	6,352,000	438,000	6·9
Total	2,693,738,000	139,791,000	5·2

Great Britain's investments of capital in India and the colonies and in foreign countries. (*End* 1907.)

√

	India and the Colonies.	Foreign countries.	Total.
	£	£	£
Government loans	531,559,000	167,000,000	698,559,000
Municipal stocks	34,387,000	24,514,000	58,901,000
Railways	312,291,000	886,700,000	1,198,991,000
Banks	33,621,000	20,480,000	54,101,000
Breweries and distilleries	3,955,000	13,250,000	17,205,000
Canals and docks	100,000	5,874,000	5,974,000
Commercial, industrial, &c.	27,526,000	50,084,000	77,610,000
Electric lighting and power	6,461,000	1,225,000	7,686,000
Financial, land, and investment	126,040,000	60,987,000	187,027,000
Gas	3,234,000	13,185,000	16,419.000
Mines—			
Coal and iron ore	8,532,000	4,424,000	12,956,000
Copper	10,781,000	27,744,000	38,525,000
Diamonds and other stones	14,026,000	620,000	14,646,000
Gold	144,008,000	17,170,000	161,178,000
Silver, lead, and zinc	5,081,000	5,432,000	10,513,000
Tin, &c.	2,334,000	3,234,000	5,568,000
Nitrate	—	10,903,000	10,903,000
Oil	3,704,000	10,564,000	14,268,000
Rubber	3,104,000	2,329,000	5.433,000
Tea and coffee	20,765,000	634,000	21,399,000
Telegraphs and telephones	7,371,000	26,864,000	34,235,000
Tramways	11,780,000	23,509,000	35.289,000
Waterworks	1,492,000	4,860,000	6,352,000
Total	1,312,152,000	1,381,586,000	2,693.738,000

year. This amount is rather above the average we can hope to maintain. The great investment of capital now taking place is needed to restore the average which was unfortunately permitted to decline in the ten years which came to an end in 1904.

For the purpose of showing the nature and extent of our colonial and foreign investments since 1st July, 1906, I append the following statement:—

Great Britain's capital investments in other lands since* 1st *July*, 1906.

	1908-09.†	1907-08.	1906-07.
Government loans—	£	£	£
Indian	7,275,000	4,950,000	3,525,000
Colonial	27,072,615	12,031,269	9,593,383
Foreign	30,492,844	10,638,937	4,860,767
Total	**64,840,459**	**27,620,206**	**17,979,150**
Municipal loans—			
Indian	1,178,500	985,000	Nil
Colonial	4,455,551	3,878,306	745,293
Foreign	8,167,353	4,241,812	1,813,830
Total	**13,801,404**	**9,105,118**	**2,559,123**
Railway companies—			
Indian	5,303,875	6,674,250	400,000
Colonial	7,446,776	10,665,000	4,721,125
Foreign	40,033,278	34,213,311	29,428,120
Total	**52,783,929**	**51,552,561**	**34,549,245**
Miscellaneous—			
Banks	1,220,000	1,602,500	7,194,927
Breweries and distilleries	Nil	167,120	44,800
Canals and docks	450.000	Nil	400,250
Commercial, industrial, &c.	9,343,862	2,639,852	2,468.111
Electric lighting and power	2,403,490	1,629,440	770,000
Financial, land, investment and trust	8,326,204	5,163,144	4,445,671
Gas and water	1,218,822	519.500	280,000
Insurance	Nil	Nil	Nil
Iron, coal and steel	1,521,840	736,050	387,547
Mines	7,951,887	3,634,764	6,752,705
Motor traction and manufacturing	80,000	145,000	502,000
Nitrate	164,700	566,750	790,000
Shipping	405,000	976,000	Nil
Tea, coffee and rubber	1,824,300	1,158,048	1,030,220
Telegraphs and telephones	Nil	150,900	8,286,250
Tramways	9,330,270	2,778,400	972,402
Total	**44,240,375**	**21,866,578**	**34,234,383**
Grand total	**175,666,167**	**110,144,453**	**89,321,901**

* Amount calculated at the price of issue, and exclusive of loans raised to repay former loans.

† Period from 1st July, 1908, to 30th June, 1909.

The members of this Society may also wish to discover the countries in which we are for the moment investing a large portion of our annual savings. To reveal this I have analysed the new issues of capital for other lands placed in the United Kingdom from 1st July, 1908, to 30th June, 1909. I append the statement:—

The countries in which Great Britain has invested capital in the year from 1st July, 1908, *to 30th June*, 1909.

	Governments.	Municipalities.	Railways.	Other securities.	Total all securities.
India and the colonies.	£	£	£	£	£
Australasia—					
New South Wales	4,417,500	—	—	266,908	**4,684,408**
New Zealand	—	—	—	70,000	**70,000**
Queensland	1,940,000	—	—	145,500	**2,085,500**
South Australia	—	—	—	—	—
Tasmania	197,000	—	—	—	**197,000**
Victoria	1,470,000	—	—	193,000	**1,663,000**
Western Australia	1,394,425	1,222,552	—	127,833	**2,744,810**
Unenumerated Australasia	—	—	—	800,000	**800,000**
Total Australasia	**9,418,925**	**1,222,552**	—	**1,603,241**	**12,244,718**
British East Africa	—	—	—	20,000	**20,000**
British Guinea	—	—	—	—	—
British North Borneo	—	—	—	865,259	**865,259**
Canada	10,846,190	2,506,949	7,446,776	7,661,486	**28,461,401**
Gold Coast	990,000	—	—	317,286	**1,307,286**
India	7,275,000	1,178,500	5,303,875	556,970	**14,314,345**
Jamaica	—	—	—	124,144	**124,144**
Malta	—	—	—	125,000	**125,000**
South Africa—					
Cape Colony	1,500,000	372,550	—	—	**1,872,550**
Natal	477,500	185,000	—	—	**662,500**
Orange River Colony	—	73,500	—	—	**73,500**
Rhodesia	—	—	—	1,580,853	**1,580,853**
Transvaal	3,840,000	95,000	—	4,640,859	**8,575,859**
Unenumerated, South Africa	—	—	—	827,500	**827,500**
Total, South Africa	**5,817,500**	**726,050**	—	**7,049,212**	**13,592,762**
Southern Nigeria	—	—	—	113,040	**113,040**
Straits Settlements	—	—	—	1,126,907	**1,126,907**
Unenumerated colonies	—	—	—	250,000	**250,000**
Total India and the colonies	**34,347,615**	**5,634,051**	**12,750,651**	**19,812,545**	**72,544,862**

The countries in which Great Britain has invested capital—Contd.

	Governments.	Municipalities.	Railways.	Other securities.	Total all securities.
Foreign countries.	£	£	£	£	£
Argentina	3,560,800	—	14,917,090	5,044,926	**23,522,816**
Belgium	—	—	—	80,000	**80,000**
Brazil	9,267,138	1,724,700	1,029,380	2,773,479	**14,794,697**
Bolivia	—	—	—	10,000	**10,000**
Chili	2,895,000	—	846,000	398,200	**4,139,200**
China	3,190,000	—	—	—	**3,190,000**
Colombia	—	—	332,480	739,375	**1,071,855**
Cuba	—	—	100,000	—	**100,000**
Denmark	—	487,500	—	43,750	**531,250**
Dutch East Indies	—	—	—	177,004	**177,004**
,, West ,,	—	—	—	50,000	**50,000**
Ecuador	—	—	416,070	—	**416,070**
Egypt	—	—	—	769,570	**769,570**
Finland	1,665,000	598,400	—	—	**2,263,400**
France	—	—	—	335,067	**335,067**
Germany	—	—	—	47,000	**47,000**
Japan	—	3,756,353	1,950,000	970,000	**6,676,353**
Mexico	—	—	7,301,444	5,572,810	**12,874,254**
Netherlands	—	—	—	125,000	**125,000**
Nicaragua	460,000	—	—	—	**460,000**
Norway	—	381,150	—	155,000	**536,150**
Panama	—	—	—	111,000	**111,000**
Paraguay	—	—	182,000	—	**182,000**
Persia	—	—	—	1,200,000	**1,200,000**
Peru	—	—	—	130,000	**130,000**
Philippines	—	—	1,819,393	—	**1,819,393**
Portugal	—	—	—	20,000	**20,000**
Russia	8,475,525	—	—	1,065,250	**9,540,775**
Salvador	—	—	36,000	—	**36,000**
Spain	—	—	—	59,993	**59,993**
Sweden	—	881,000	—	—	**881,000**
Turkey	979,381	—	204,800	—	**1,184,181**
United States	—	338,250	10,358,621	2,937,784	**13,634,655**
Uruguay	—	—	540,000	158,384	**698,384**
Venezuela	—	—	—	25,000	**25,000**
Unenumerated, foreign countries	—	—	—	1,429,238	**1,429,238**
Total, foreign countries	**30,492,844**	**8,167,353**	**40,033,278**	**24,427,830**	**103,121,305**
Grand total	**64,840,459**	**13,801,404**	**52,783,929**	**44,240,375**	**175,666,167**

To show at a glance the countries in which we are investing our capital most freely at the present time, I give the following supplementary statement of the amount of capital supplied to our principal borrowers in the year from 1st July, 1908, to 30th June, 1909:—

	£		£
Canada	28,461,401	Mexico	12,874,254
Argentina	23,522,816	Australasia	12,244,718
Brazil	14,794,697	Russia	9,540,775
India	14,314,345	Japan	6,676,353
United States	13,634,655	Chili	4,139,200
South Africa	13,592,762	China	3,190,000

In conclusion, I would direct your attention for one moment to the immense advantages to this country of its investments in other lands. The investment in the last sixty years of about 2,500,000,000*l.* of British capital has occurred simultaneously with a vast growth of British trade and prosperity, and in my opinion this growth of our trade and prosperity is largely the result of our investment of capital in other countries. By building railways for the world, and especially for the young countries, we have enabled the world to increase its production of wealth at a rate never previously witnessed and to produce those things which this country is specially desirous of purchasing—foodstuffs and raw materials. Moreover, by assisting other countries to increase their output of the commodities they were specially fitted to produce, our investors have helped those countries to secure the means of purchasing the goods that Great Britain manufactures. Thus by the investment of capital in other lands we have, first, provided the borrowing countries with the credit which gave them the power to purchase the goods needed for their development, and secondly, enabled them to increase their own productions so largely that they have been able to pay us the interest and profits upon our capital and also to purchase greatly increased quantities of British goods.

The large sums of capital which Great Britain is now supplying to other lands will ensure greatly increased incomes to her own people of all ranks and classes, will widen the Indian, colonial and foreign markets for the goods she manufactures and will greatly assist in providing her dense and constantly growing populations with plentiful supplies of foodstuffs and of raw materials.

Discussion *on* Mr. G. Paish's Paper.

Mr. Edgar Crammond said that, working on different lines, but using largely the same data as Mr. Paish, he arrived some three years ago at conclusions almost identical with those now expressed. Mr. Paish stated that he had not allowed for any capital used in the shipping business; and he mentioned also that he had not included the private investments of mercantile and banking houses, which would amount to several hundred millions. If allowance were made for these two items he thought it would be found that he was quite in agreement with Mr. Paish as to the total amount of capital invested abroad and also as to the income therefrom; but there were one or two points upon which he should like to dwell; and the first was the important part investments of capital abroad played in the adjustment of the trade balance of this country. If they took the figures of imports and exports for 1908, they would find that the value of imports, including specie, was 649,600,000*l*., and the value of exports, including re-exports and specie, was 520,000,000*l*.; showing an excess of imports of 129,500,000*l*. But in considering this question of the trade balance, they would have to take into consideration what had been termed their invisible imports and exports; and to that debit of 129,500,000*l*., *i.e.*, the excess of imports of commodities and specie over the exports of commodities and specie, they must add the amount of capital invested abroad. Mr. Paish apparently estimated the total capital invested abroad during the past twelve months at 170,000,000*l*.; this seemed to him to be an excessive estimate, and he presumed it must represent the gross total of the nominal amount of capital offered for subscription, and not the actual amount subscribed by British investors.

Mr. Paish said he did not suggest that that was all sent this year. In many of the loans, the calls were spread over several months.

Mr. Crammond said he thought that about 120,000,000*l*. was an approximate figure for the year 1908, and that sum must be added to the excess of imports of commodities. Two other debit items must be included, namely, the earnings of the foreign banking houses carrying on business in the United Kingdom, and the interest on foreign investments in British, Colonial and Anglo-foreign enterprises, such as railways, mines and so on, which he believed amounted to a very large sum, and consisted of mainly French and German capital. He estimated the total income due to foreigners in respect of the last-named items at 14,000,000*l*. Adding those three items together, namely (*a*) the excess of imports over exports, (*b*) the investment of capital abroad, and (*c*) the earnings of foreign banking and mercantile houses, &c., there was a total debit of 263,500,000*l*. Against that they had to set the income earned by their investments abroad.

Mr. Paish put the income received on a total capital of 2,700,000,000*l.* at 140,000,000*l.*, but it must be borne in mind that this total was exclusive of the money invested through banks, &c., and also of the private investments of individual British subjects abroad. He should venture to estimate the total income from investments abroad at 160,000,000*l.*, and that was the first item to be set off against the debits he had mentioned. Then they must take into account the earnings of the shipping industry, which seven years ago were estimated by Sir Robert Giffen at 80,000,000*l.* Shipping had recently passed through a period of depression; and last year he had assumed the figure to be about 70,000,000*l.* Then they had to add the earnings of their mercantile houses, insurance companies, banks and commission houses carrying on business abroad. There again it was a question of estimate; and he submitted one of 35,000,000*l.* as the annual income accruing to this country in respect of such services. Sir Robert Giffen put it at 25,000,000*l.* in a paper which he wrote seven years ago, but since then the international financial operations transacted through London had increased enormously. Of course this was a very rough attempt at a balance-sheet; but he believed it represented the approximate figures. As a matter of fact, a large part of the income earned by British capital invested abroad was never brought home, but was re-invested in the country from which it was derived; in fact it could not be brought home, or it would starve the undertakings in which it was invested. One of the most important effects of the investment of capital abroad was the purchasing power it gave to foreign countries and the colonies in our markets; and unless they created credits for their colonial and foreign customers in this way, he did not see how they were going to augment their purchasing power in British markets from any other source. If the colonies and foreign countries borrowed from other countries, they must, of necessity, purchase their commodities from those countries in which they borrowed money; and if British capitalists suspended the investment of capital abroad, he believed they would inevitably reduce their export trade to a corresponding extent—namely, by one-fourth. It was however practically certain that this country must go on investing capital abroad, and probably at an accelerated rate, because the enterprises taken up must be extended and adapted to meet the growth of foreign trade, and if they did not provide for such expansion, other countries—Germany and France—would do so. Amongst the advantages of the investment of capital abroad they got stability of income, because, if one part of the world was depressed another was flourishing; and they not only got a more even income but a larger one. The investment of capital abroad provided a field for the employment of the sons of the middle classes as managers of railways, mines, and a great variety of other enterprises; and moreover it gave a great amount of employment in the city of London and other cities for directors, managers, clerks, solicitors and accountants, &c. There was no doubt that on the whole the investment of capital abroad had been beneficial to the trade of this country. But it was desirable that the money sent abroad should continue to be controlled by British companies; that was to say, that it should be under the direct control of companies, the head offices of which were situated in this country. Germany had built up her great export trade, largely by investing capital abroad—he believed the total amount of German capital invested abroad amounted to upwards of 1,500,000,000*l.*; and France also had appreciated the benefits to be derived from the investment of a portion of her capital in foreign countries, and had invested about 1,600,000,000*l.* in this manner.

Mr. HENRY BEAUMONT said this was a question in which for some years he had taken a very deep interest, and he felt very grateful to Mr. Paish for such an elaborate paper with such excellent statistics, the circulation of which would do a great deal of good, set people thinking on this question, and put a great many right who hitherto had been very wrong. He thought Mr. Paish had rather underestimated the amount of foreign investments, and that they might be safely put at 3,500,000,000*l.*, not including shipping. The very fact that these investments abroad brought in a total of 140,000,000*l.* of income to this country proved that contention, because they had a vast amount of money invested which was not bringing in any interest at all. He had taken an interest in this question owing to the teaching of a certain school of politicians who had made some very alarming statements with regard to the tremendous increase which had been going on in the last few years in capital investment abroad, and arrived at the conclusion that because the Government return had gone up about six to eight millions in two or three years, that amount, capitalised at 5 per cent., showed the increase in such investments. Sir Joseph Lawrence wrote a long letter to *The Times* in March trying to prove that conclusion. He (Mr. Beaumont) had tried to show that this tremendous increase in income was due to other reasons; not only to the increase in investments abroad, but also to a better collection of the tax and to the much larger dividends received from foreign investments. Going into this rather carefully, he found one or two remarkable instances of this increase. In 1896 they were receiving from investments in the Transvaal an income of 1,600,000*l.*, whereas last year the income had risen to 8,753,000*l.*, and very likely this year it would reach 10,000,000*l.* It would not be right to capitalise the difference on the 5 per cent. basis. The chief reason for the difference was the increasing profit to investors, and in this instance had nothing whatever to do with further capital outlay. Again there had been an enormous increase in the income derived from American investments in the last ten years. In 1896 the Canadian Pacific paid 3 per cent.; in 1908, 7 per cent.; the Grand Trunk of Canada, first and second preference, nil; last year, 5 per cent.; and many other instances could be given to a similar effect. That had not only happened in America, but also very largely in Argentina. It was quite likely that this increasing investment abroad was having a different effect on the trade of this country from what it had many years ago. In the case of a new country, if they lent it money, the whole of the money would have to go out to that country in commodities for building railways, or whatever they were doing, and the effect on the trade of the country lending that money was very great. Take the case of Argentina, which had to remit to this country every year about 15,000,000*l.* for interest on money lent to her. Argentina was continually in the market borrowing; hardly a month passed that she was not borrowing money for railways and other purposes. The result was that the loan acted as a set-off to the interest due, and nothing happened. The money was left by the investor here, but it remained here against the remittances which Argentina would otherwise have to send. There was a marked difference, therefore, between the effect of money invested abroad at the present day and ten or fifteen years ago, when that and other countries were not in such conditions of prosperity. He hoped the figures Mr. Paish had given would be published, and that some of the foolish ideas which had gathered round the question would be dissipated. After all, it was a grand thing for the country, for capitalists, and for everybody concerned, to have largely increasing investments in foreign countries.

Mr. C. ROZENRAAD (President of the Federation of Foreign Chambers of Commerce), said that the author had done good work in bringing forward this question. It was of the highest importance for every country to possess a large amount of foreign securities, and especially for England, so as to make up the difference between the imports and exports by freights, commissions, insurance premiums, and also by the interest on foreign securities. But when the author gave the amount of 2,700,000,000*l.* of British capital invested in Indian, Colonial and foreign loans, he surely made a mistake. What were the facts? Many of these loans were issued not only here, but at the same time in Paris, Amsterdam, Berlin, &c. Besides, as soon as any loan of importance is issued here, thousands of banks, bankers' brokers and other intermediaries, send the prospectus abroad, recommending the loan to their clients, who send in their subscriptions or ask their correspondents in London to subscribe to the loan for their account, and it may safely be said that a considerable amount of the different Colonial and foreign loans introduced on the London market have found their way to the Continent. When, for instance, it was said that England had invested 600,000,000*l.* in American railways, he thought that was a mistake. They were only issued here, America being in constant relations with the English money market, having sent in subscriptions here. As to France, in view of the internal situation in that country (he had just returned from Paris, where some people think that the situation is not altogether *couleur de rose*) the French rentiers invest their money in foreign securities, and Paris, where money is generally cheaper than in London, is now the principal market for international securities. According to the *Journal Officiel* of 25th September, 1902, France had already invested at that date 1,190,000,000*l.* in foreign securities, and since then this amount has been increased, at least by another 500,000,000*l.*, of

Central and South American securities, bought principally on the London market. He must question also the statement that England had invested 161,000,000*l*. in gold mines. That amount had been issued here, but had to a great extent been taken up by the French public; also by South Germany. He did not deny that the investing power of Great Britain was very great, but he did not think that the figures given by Mr. Paish could be given as representing only Great Britain's investments. It had been said that Argentina was borrowing constantly, which is true. At the end of January, 1909, 716,000,000*l*. of British capital was invested in the various Republics of South and Central America, as quoted on the London Stock Exchange, but how many millions of this amount, how many shares in Argentine, Brazilian, Peruvian and other companies, which have their head offices in London, are now in the hands of foreigners? Great Britain acts only for these loans as intermediary, as honest broker working in all parts of the world, taking over—to a great extent with the money of her customers—the loans of other nations, and is thus able to make handsome profits in the way of commissions on the loans themselves and on the payment of the coupons, rate of exchange, &c., and to give large orders to British industry, when the proceeds of these loans serve to construct railways, harbours, canals, &c., abroad, or to build ships for foreign account. As stated before, Paris is now the principal market for international securities. Formerly England used to hold considerable amounts of European government bonds. Now every broker on the Stock Exchange will tell you that she holds only relatively small amounts of Italian, Spanish, German, Austrian, Dutch and other European stocks, so that she would eventually not even be able to procure a large sum of gold by sales on the continent of European securities. Formerly England was the principal holder of American railway shares and railway bonds. Now France, Germany, Holland, Switzerland, &c., are largely interested in these shares and bonds, as well as in Japanese and Chinese securities which they bought in London or which they took over, direct, without the intervention of England. In a word, although the investment power of Great Britain is very great, London is the principal intermediary between Europe and other parts of the world for the placing abroad of foreign securities issued here.

Sir RICHARD B. MARTIN said he did not quite understand what the author meant by the statement on page 470 as to the large amount of income derived from "capital privately placed abroad." Did it mean mills built, and things of that kind?

The PRESIDENT said one instance would be the case of landowners who had land in Argentina not through a company, but who managed it themselves, the interest being remitted to this country.

Mr. PAISH: And money invested through mercantile and banking houses.

Sir R. B. MARTIN said he should not have thought the capital derived from those sources of income amounted to the very considerable sum mentioned. The tendency lately with regard to enterprises abroad had been to turn them into companies. He had a case himself of a property in the West Indies which some years ago was made into a company for the sake of convenience. He was rather surprised that on page 466 France did not appear as a country in which investments were made. Probably not very much French stock was now held in this country, but there was a certain amount held, as also were French railway bonds. At one time his bank held a considerable amount both of French rentes and also railway bonds. In fact, originally the French railways were subscribed for in England. Only the other day he accidentally turned up the original prospectus of the "Western of France," for which subscriptions were invited in England. Again, why was not the United States included among the capital lent to "Indian, Colonial, and foreign securities." The whole paper was extremely interesting, but required a great deal of careful consideration before it was possible to criticise it usefully.

The PRESIDENT said he should like to say a word or two, although he had no original sources of information on the subject except those which came to him acting in connection with the Income Tax Committee. Since the sitting of that Committee he had read everything which had been written on the subject, and made as careful a consideration of the different estimates as he could, and checked Mr. Crammond's and Mr. Beaumont's papers and those in the *Economist* and *Statist* by asking questions of the people most likely to know in the various departments of various countries, and also as regards the colonies, through colonial houses and Agents-General. Trying to put the various estimates together, it was very striking to find that though there were great apparent discrepancies at first sight between the details, the total estimates generally came very close to one another. Even before he had the advantage of reading this paper, which was fuller than any other single source of information, he had already derived from these almost conflicting sources of information the figure of $3\frac{1}{4}$ thousand millions, excluding shipping, and that figure was really absolutely confirmed as the figure of the present day by Mr. Paish's 3 thousand millions at which he ultimately arrived. The details varied in the most singular way. For example, Canada varied the most, and he had totally failed to explain the great discrepancies there were in that case, the estimates varying far more both absolutely and proportionally than in any other case. He imagined it was what they also saw in the case of Argentina. The men in Argentina—engineers, and so on—had made their money in Argentina, but they went to Paraguay and Uruguay, next door, to invest it. They knew more about these newer countries than we did. Also in the case of Canada there was an enormous amount of practical investment on a small scale by citizens of the United States. The largest immigration into Canada last year was American, and it was accompanied by capital, and probably by a great deal of investment besides the capital actually brought in by the 42,000 Americans who went there to farm. But while the details differed in this way, there was the great fact that there was an enormous income in this country, far larger than the returns at first sight disclosed, drawn from foreign investments, and the greater portion of which paid taxes in this country. The portion about which there was doubt was the income of businesses which had operations in all parts of the world, where it was very difficult to say what portion was receivable in this country, and therefore liable to taxation. There were also private investments, one form of which was through companies or agents, but not as the money of companies having the income-tax deducted at the source. There were many colonial companies who acted as agents for private owners of land, and therefore that money did not come through the company and the income-tax was not deducted. There were details of this kind of great interest which might throw light on this subject if pursued. He imagined that stockbrokers must have a great deal of knowledge, outside anything which could be obtained from the returns, from what was placed before them as regards sales, for instance between English and French holders of various classes of securities. Again, taking a case like investments in tea, the figures in the paper did not look as if they were right. The author would probably feel that the dates and additions did not seem to quite correspond with the facts. Notoriously the Java tea trade, which was increasing very much, was run by British capital, not Dutch; and, notoriously, the Siberian butter companies, which were doing an enormous trade, were financed by Anglo-Danish capital—he presumed, English capital passing through Denmark. The deductions drawn from this paper got so near to the edge of what might be called a political discussion that he had listened to every speaker with a certain doubt whether he ought not to interfere; but he hoped he did right in not interfering, because everything said had been defensible from the point of view of the Society, though it had all rather tended in one direction. He was anxious that the other side, if it could be kept to statistics, should be put, but he feared that here he might be trenching on dangerous ground. There was an extraordinary agreement of view, which confirmed his own impression, as to the beneficial effect on trade of large foreign investments. But he did not think that was universally the case; it was impossible to contest the view put forward by other writers that there were cases in different directions which told both ways. For instance, how far had France benefited by her 500 millions of investment in Russia? It had not been a successful class of investment on the whole; it was 500 millions some years ago, and it had remained stationary, though now tending to increase, and the beneficial result had not been discernable. France, in proportion to her wealth, had probably a larger amount of foreign investments than we had. At all events she invested more largely in Continental securities in Spain, Portugal, Italy, Russia, Austria-Hungary and the southern Slavonic countries and Turkey. They had had no light thrown to-day on German foreign investment in countries where it existed, but Mr. Rozenraad got on to the edge of the subject, and he understood him to suggest that German capital was going largely to South America. If they watched the exact accord between the increase in recent investment in South American countries and trade, they would find that our trade had kept pace, and had been proportional to the increase in our investments. The great increase in our foreign investments of late had been in Mexico, Argentina and Brazil, and if they watched the trade figures there, they would find that those were the countries in which our trade had either grown very rapidly as against that of our rivals, as in Mexico, or in which it had remained stationary in proportion as against that of the United States and Germany. In the case of Brazil and Mexico the figures were most encouraging to our trade, and in Argentina the proportion had been fairly kept, in the last few years. The cases were all different, because in Mexico the Americans owned the railways and great numbers of concerns, yet England had the most trade. The Americans had rather lost their trade in Mexico, although they were next door. In the case of Argentina we owned nearly all the railways, yet our position there was more stationary. Still we had continuously kept such an enormous bulk of trade that substantially no one else existed. He was not going to venture on the dangerous ground of the banks, which were alluded to in the paper, and which he did not understand. There were great corporations in the position of the Credit Lyonnais which did business in all parts of the world, but it was beyond his competence to deal with them. The shipping profits had been very variously estimated, and no doubt they varied from time to time; but the amount of capital invested in shipping was much more accurately ascertainable, though it was outside the present paper. In conclusion, he must express his warm thanks to Mr. Paish for the light he had thrown on the subject. The main fact which came out—though there was a great deal of guess-work in all figures of this sort—was that the flow of investment in the case of a rich country was naturally fairly steady; that the large increase in foreign investment in the last few years had not been altogether abnormal, as there had been one period of greater investment proportionately at an earlier time; and that there was no reason why they should regard it as anything but the natural flow of capital where they got on the whole the best return, and it did not present any dangerous features or prevent the subscription of capital for home industries. This was the main doctrine, and that it led to the large purchases of our goods he did not think anybody would doubt who looked at the recent statistics concerning Mexico and Brazil. Without wishing to stop the discussion, he would propose a hearty vote of thanks to Mr. Paish.

Sir J. ATHELSTANE BAINES seconded the vote of thanks.

Sir NATHANIEL NATHAN, K.C., asked how Mr. Paish discriminated, with regard to the holdings in companies or other undertakings which he described as a means of investment of British capital abroad, between those shares and interests which were held in this country, and those which were held either directly by or on behalf of investors in other countries? How was he able to say that so much British capital, bringing in its interest or dividends here, was invested, as distinguished from, say, capital either in British or in other companies held by foreigners? Again, there was the counter question, to what extent was it possible to estimate the British holdings in undertakings and companies not subscribed here, or launched on the market here, especially such as the coupon obligations of the great American companies, the extent of the holding of which here must be very great indeed, but which there was surely no sufficient means of identifying? It was familiar to them all that with regard to a vast class of investments it varied from day to day, and almost from hour to hour. There was an enormous fluctuating world-wide capital provided by all the civilised nations which at one moment might be held by British subjects; while at another moment the same evidences of indebtedness would have passed into the hands of people abroad, and *vice versâ*. No doubt it was primarily that particular part of capital which played so important a part in the balancing of accounts and the remitting of sums which had to go into the hands of those who were, on balance, our creditors in trade. How far any of those could accurately be classed specifically as permanently British capital, and how much as only casually and momentarily British, was an important question, and one which nothing Mr. Paish had told them enabled anyone to come to a conclusion about.

Mr. GEORGE PAISH said they would appreciate that this was a fundamental question as to the method of compilation; and he should like to reply at once to the point Sir Nathaniel Nathan had raised. With regard to our holdings in foreign government securities, he had not taken the amount quoted on the Stock Exchange, but merely the income upon which income tax was paid in this country. The whole of the calculation was for the purpose of ascertaining what sum would the Commissioners of Inland Revenue arrive at if they took out from the income tax returns as far as coupons were concerned, and from the reports of publicly issued companies as to dividends, the amount of income assessed to income tax in this country. In the Report of the Commissioners of Inland Revenue the amount ascertained was only 79,560,000*l*. By analysing the reports of a great many additional companies which paid income tax in this country, he arrived at the figure of about 140,000,000*l*.; and he believed that was the figure the Commissioners would reach if they went further into the matter. He thought that every figure in the paper was based on documentary evidence. Coming, then, to the question of obligations or coupons on American bonds, that was the most difficult of all calculations. His figure was arrived at in this way: the Inland Revenue Commissioners obtained from their agents in this country the whole of the income which came through coupons. The coupon buyers had to make a return to Somerset House, and they got a commission for so doing. He thought at first that foreign government coupons payable abroad were included in the item of "coupons," but on subsequent examination he found that was not so. The foreign government coupons payable abroad were taken out separately, and in this way the Commissioners arrived at the total amount of income derived from foreign government loans assessed to income tax. The interest on Austro-Hungarian debt, for instance, was payable by coupon, and as there was no agent in this country the figure of 74,000*l.* could only be known from the coupons cashed by coupon buyers. Hence the coupons shown in the Commissioners' returns were mainly American railway coupons. The second thing he did was this: there was an item for "other securities." They all knew that the dividends on American railway shares were largely received by big firms; the shares were put in the names of these firms, and those who wanted their dividends went to a big house who stamped the share certificate and handed over the dividend to the owner of the certificate. These firms also made returns to Somerset House of the income tax deducted from dividends upon these bearer shares; and they got a commission for collecting the tax. He had endeavoured to get from the United States the amounts of American shares held here, and the calculations of dividends on these shares tallied with the amount of income derived from "other securities." With regard to colonial and foreign railways, he had taken the figures from the reports of the companies as ascertained definitely. The income from companies in which foreign investors held the bulk of the shares or bonds was entirely excluded. Sir R. Martin had referred to our income from French railways; that income he had excluded entirely, as practically the whole of the securities had been repurchased by French investors. There was no doubt that, after making every possible exclusion he could think of, there was still a residue belonging to foreigners; and he had called attention to that in the paper; nevertheless, it did not affect the figure which the Commissioners of Inland Revenue would arrive at, because the income of the foreigner coming from British companies was also taxed. Against the income derived by foreigners from some of the securities included, they had to place the large amount of income obtained by private investments of British capital abroad. Most of those present, he thought, had read an excellent paper written by Mr. Huth Jackson, who contended that London had over 100,000,000*l.* of capital employed in discounting foreign bills—not bills created for the purpose of paying for goods bought, but bills created in order to finance trade between foreign countries. He made inquiry as to the proportion of the income from foreign investments assessed to income-tax in England received by foreigners, and he thought that on the average about 10 per cent. of it belonged to foreigners. That would mean that 270,000,000*l.* of capital belonged to foreigners out of the total sum calculated of 2,700,000,000*l.* But against this sum had to be placed the capital privately invested abroad by this country, and he thought the amount of income derived from that source greatly exceeded the amount of income paid over to foreign investors. He had come to the conclusion that they derived an income from something like 500,000,000*l.* of capital privately invested in other countries. He thought the figure of

2,700,000,000*l.* of British capital invested abroad was, if anything, an under-statement, but he only wished to place before the members a figure for which he had documentary evidence.

The PRESIDENT said there had been no answer given to the question with regard to the main lines of investment of German capital. They knew all about the French investments, but very little about the German. In the last number of the *Revue de Paris* there was an article about the launching of a new French iron firm, but the capital appeared to be German; and he would be interested to know whether Germany was investing very largely in industrial undertakings on the continent as France did.

Mr. ROZENRAAD said there were about 1,600,000,000*l.* of German capital invested abroad.

Mr. PERCY ASHLEY remarked that the German Government had made some elaborate attempts to estimate the extent of German investments of capital abroad; and he thought that these would to some extent answer the President's question. A report on "German Capital Investments beyond the Seas" was presented to the Budget Commission of the Reichstag by the German Admiralty in 1900; and a revised and enlarged memorandum on the same subject was included in the volume entitled *Die Entwicklung der deutschen Seeinteressen im letzten Jahrzehnt*, prepared by the economic staff of the Admiralty and published by that Department in 1905.

Mr. A. W. FLUX said he should like to ask the author to go one step further in the way of explanation. If he understood the explanation given by Mr. Paish in determining what holdings of capital in various countries were to be classed as British, he (Mr. Paish) rejected all countries in which the British holdings were not very significant: while his estimate of foreign holdings in the remaining companies accounted for, perhaps, 10 per cent. of the total. Was there any figure in this aggregate, representing British holdings in those cases, rejected on the ground that the capital was mainly held by foreigners, or were the British holdings in these cases regarded as off-setting the foreign holdings covered by the 10 per cent. estimate? The question of the basis on which to estimate the British share of capital held in various companies was one of the most interesting, and certainly one of the most difficult, points; and he knew that Mr. Paish had given it a great deal of attention; but he felt that, much as they were indebted to him, if they could get a further peep behind the scenes they would profit still more than they had done. At the same time, he might suggest that it would be exceedingly helpful if an appendix could be given with a few more tables in which the distribution of the holdings in the principal countries of the world according to main classes were given; such as Government loans, railways, municipal stocks, industrials, and so on. Then, one would have material for a comparison of some of those groups with the estimates given by other speakers and writers. There were some remarkable differences in the detail of the different calculations; and one of the most remarkable things was the way in which they gravitated to the same aggregate, however the details varied. One could not help wondering whether it was wholly accidental or whether at the back of their minds there was a certain rough figure, and whether that did not influence the way in which they set to work. No doubt they had all done their best to remove any conscious bias of that kind; still sometimes one was unconsciously led in a particular direction.

The PRESIDENT said it was notorious that the opposite was the case with regard to the Board of Trade and the Government, because they maintained 2,000,000,000*l*. sterling for a long time as the official figure.

Mr. FLUX said the various recent estimates seemed to approximate to 3,000,000,000*l*. with marvellous precision. That made it all the more desirable that they should know as much as possible of the method by which the estimates were made. Mr. Paish said that the present capital value of a good many investments represented a good deal more than was put into them; but, if he correctly understood him, the table in which he gave the 2,700,000,000*l*. did not take that into account.

The PRESIDENT said he did not think it took into account the extinction of companies. There were a lot of land companies in new countries which disappeared; in New Zealand, for instance, there were notorious cases.

Mr. FLUX asked what would happen if they were to make a deduction for the capital which had depreciated in value, and an addition for that which had appreciated? Would they get the current market value, and would that give as a result an average return of a little over 5 per cent.? Or, if the revenue was really 140,000,000*l*., should that be capitalised at, say, 4½ per cent. or some lower rate? A very substantial addition would have to be made to the figure of the capital if they were to aim, not at the amount put into these various enterprises, but at the value that they represented to-day, based on the average rate of yield which intelligent people might expect them to give over a series of years. He felt immensely indebted to Mr. Paish for his paper; and there were a number of interesting points which, if time permitted, he should like to call attention to. One was found in the tables setting forth the average yield of different classes of investments. It was not unimportant to compare the average yield in the case of Government loans between foreign, colonial, and Indian investments; and the same in the case of railways. In each of those two cases, where discrimination was made between different classes of investments, the rate on foreign investments was substantially higher than that on colonial; and that on colonial was higher than on investments in India. The precise reason for the latter difference he did not like to guess at; but the difference between the rate secured on investments outside the British Empire and inside it, whether in Government loans or in railways, was rather a remarkable feature. Something had already been said about the shifting of investments, European investments particularly; those which were formerly largely held here being now largely held by neighbouring countries; and the table at the bottom of page 467 seemed to illustrate that. There were only two columns which showed a substantial increase during recent years, namely, those relating to colonial and Asiatic investments. The European column showed a decrease from the third year to the last year shown of about one-eighth; it appeared to be roughly a transfer from European to colonial and South American investments. He had, unfortunately, wholly failed to follow the explanation when Mr. Paish said he had adopted that method of computing which would lead to the result that the Inland Revenue Commissioners ought to get. Perhaps it was too long a matter to be explained then; but he hoped he might have the opportunity of getting a fuller explanation.

Mr. W. R. Lawson said they seemed to be making a heroic effort to solve an insolvable problem. Nobody could appreciate better than he did the labour and ability Mr. Paish had bestowed on these calculations; and nobody would more readily admit than Mr. Paish that there was not a table among them which could be accepted as scientific statistics. Without going into the technical part of the subject, he would ask him in his reply to say whether he had not used a few ambiguous terms. Toward the close of the paper he spoke about these creations of credit, which they principally were, as "investments," which many of them were not, and as "savings," which they were still less. To give an illustration, in to-day's *Times* 9 prospectuses were published, calling for nearly 4,000,000*l*. of money. According to Mr. Paish, if those companies got the 4,000,000*l*., it would be so much British savings invested abroad. As a matter of fact, not one penny of it needed to be British savings at all. The applications for that 4,000,000*l*. of new securities would go through the banks, and at the end of the day the application money would stand at the debit of one set of people and at the credit of another set. The bank balances which represent international credits would have been re-shuffled to a greater or less extent. The borrowing operations might be carried through, not only without any gold, but with very little real capital. They did go through that way every day. Mr. Beaumont, he thought, would bear him out in this. They had overlooked entirely the fact that these new securities were in a large and growing degree creations of credit effected through international banks. The securities themselves were for the most part international; in London to-day, in Paris to-morrow, and in New York the next day. The Chairman had referred to Canada as being a puzzling problem. Of course it was, if they viewed it from the standpoint of new securities being the investment of savings. Canada asked that day for 1,200,000*l*.

for one of its railways—the Canadian Northern, and would get the money without doubt, but possibly not a dollar of it would leave London, certainly not in the shape of rails or commodities. How could that be called an investment of our annual savings? And what influence did it necessarily have on our exports? When the railway was built it might add thousands of tons of wheat to our imports, but that would diminish rather than increase our savings, as it would mean so much more food to pay for.

The PRESIDENT said the question whether it was an investment depended on whether it was going to pay interest.

Mr. LAWSON: Whether it paid interest or not would of course depend on the success or otherwise of the railway. In any case the interest would more frequently be on a creation of credit than on savings. Subscribers to new securities seldom lent their own money, and many of them had little money to lend. That was one of the paradoxes of modern credit operations. If any of us applied for 5,000*l*. of a new issue he would most likely borrow it from a bank, and the bank would off-set the loan by a credit to some other customer or some other bank. All the evening they had been talking about Mr. Paish's figures as if they represented capital and savings, but he hoped Mr. Paish would now qualify that too flattering theory. The highest estimate ever made of our annual savings would not go far towards paying for the new securities being manufactured at the present time.

Mr. PAISH said in his opinion the money they were putting into these companies and loans were savings. They could not provide other countries with money to build railways and for other purposes which required savings, or accumulated capital, without having it; and the only way they could find the capital for another country for capital purposes was by savings.

The PRESIDENT here suggested that the nature of savings was rather a side issue.

Mr. PAISH said Mr. Beaumont had said that he had under-estimated the total capital. He put forward no figure for which there was not documentary evidence, and he really believed that the total figure, after deducting the amount held by foreigners in this country, not only in these companies, but in private enterprises, was close to 3,000,000,000*l*. He compiled these figures in order that everyone might have the facts as far as he could get them. They had been guessing for a number of years, and he desired to bring together all the data it was possible to get, and which they could obtain from the reports of the numerous companies trading abroad which issued reports and balance sheets showing the paid-up capital and the profits which they were earning upon it. He had endeavoured to make the figure as accurate as possible, and if he had erred it had been on the side of conservatism. He had excluded everything he was not sure about. With regard to the income from United States Government bonds, he thought the amount was so small it was not worth putting in. The United States Government bonds were the security for the note issue of the National Banks, which gave them a special value and left no interest worth having upon them. The President's point with regard to German savings had already been answered. It was calculated that about 1,600,000,000*l*. of German capital is invested abroad. He thought everybody would bear him out that in the last ten years, and especially during the period in which we were practically a closed market for capital, the Germans were exceedingly active in placing capital abroad. They formed banks in all parts of the world, and financed foreign companies of all kinds while we were at war. The result was a wonderful growth in German trade. They took a leaf out of the book we had been reading for a number of years, and they were getting similar fruit to that we had gathered. There was room in the world for all the capital that Germany could supply, as well as for all the capital which we could find. If anything, we were supplying a little too much capital all at once to certain countries at the present time.

Sir J. A. BAINES said the formal vote of thanks to the outgoing President had been already proposed on behalf of the Society as a whole, but before the meeting closed he would like to express on behalf of the Council and officers their gratitude to Sir Charles Dilke for the assiduity with which he had entered into the work of the Society throughout his term of office as President, and especially for the stimulus he had so often given to the discussion at the ordinary meetings.

The PRESIDENT said that his only excuse, as an amateur, for interfering with the business of a scientific society was the great interest he felt in the application of statistics. Almost every subject under discussion in Parliament during the last few years appeared under a statistical aspect, and the one feature they all had in common was that there never were the statistics there ought to have been with regard to any one of them.

The PRESIDENT announced that as the result of the ballot M. Gustav Sundbärg, of Stockholm, had been elected an Honorary Fellow.

The following candidates were elected Fellows of the Society:—

Devendra Nath Ghosh, B.A.
James Walker.

RUPEE PRICES *in* INDIA, 1870 *to* 1908; *with an* EXAMINATION *of the* CAUSES LEADING *to the* PRESENT HIGH LEVEL *of* PRICES.

By FRED. J. ATKINSON, *Accountant-General, United Provinces, India.*

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1. *Introductory.*

THE index numbers (percentages) of rupee prices in India for the years 1861 to 1895 were published in the Society's *Journal* for March, 1897, those for the years 1896 and 1897 in the *Journal* for 1898, and those for the years 1898 to 1901 in the number for March, 1903. They are now brought up to the end of 1908.

2. *Method of construction of tables.*

The method of construction is explained in the Society's *Journal* for March, 1897, page 84, *et seq.* Briefly, the procedure adopted was first to ascertain the relative importance of each article of production and manufacture in India, based on the figures of 1893, and in calculating the index numbers, one or more prices at different important places of production were taken for each article, in proportion to its relative importance to the whole. Thirty-eight different classes of articles were selected; of these rice, representing three-tenths of the production of India, was allotted 30 prices out of the total of 100 taken. Similarly, wheat and other grains were allotted 5 prices each, sugar 4, jawar 3, ragi, gram, bajra, and meat 2 each, and maize, barley, potatoes, spices, and ghee 1 each, making a total of 60 prices for food. For raw produce, seeds were allotted 4 prices, cotton and hides and skins 3 each, jute, indigo, opium, tobacco, and timber 2 each, and tea, coffee, saltpetre, cutch, myrabolams, animal bones, coal, raw silk, and raw wool 1 each, making 29 in all. For manufactures, hides and skins were allotted 3 prices, cotton goods, jute goods, and oils 2 each, and silk piece goods and shellac 1 each, making 11 in all. Thus the division was:—

Articles of food	60	prices
Raw produce	29	,,
Manufactures	11	,,
Total	100	

Since 1893 changes have occurred, and some of the articles taken are of more, and some of less, importance than they then were; for example, indigo has declined, whilst coal and cotton goods have materially increased, but all the changes combined, if the heads were altered, would not make any material difference in the run of percentages. During recent years the trade descriptions in some cases, and the quality in others, of articles entered in the various Chamber of Commerce Price Currents, from which several of the prices are taken, have undergone a change, and it has been a matter of difficulty to fit the changes with accuracy to the previous order of things.

Since 1905, the Commercial and Intelligence Department of India have published index numbers of rupee prices in India prepared on different lines to the system adopted for the figures in this paper—39 articles only are taken, of which 11 are imported articles, and every article is taken of equal value in regulating the run of prices. Imported articles are regulated by their gold price, worked out by Mr. Sauerbeck in England, and the original object of the percentages of silver prices, as worked out by the writer, was to fix the run of those prices apart from the run of gold prices. The question of weighting is also a matter of importance. Imported articles may be estimated at between 8 per cent. and 9 per cent. of the internal production of the country, but 11 articles out of 39, as taken in the Commercial Intelligence Department, are nearly 30 per cent. Then again, such articles as rice and barley are given one number each, whereas the amount of barley grown is only about 2½ per cent. of the quantity of rice grown, and the production of some of the other articles, such as raw silk, saltpetre, and shellac, are even less in proportion to rice, but all are treated as of equal importance. It is not surprising, therefore, that the two sets of figures do not exactly agree, though the general run of the percentages is practically the same. It has, however, been suggested that, so far as the dweller in India is concerned, the price of imports now materially affects his annual expenditure, and this no doubt is true in regard to a comparatively small section of the Indian public who make use of imported goods, but the great bulk of the population is not directly affected by the imports, though possibly they may be indirectly in the event of an excess of imports adversely affecting the balance of trade, and thus under certain circumstances affecting internal prices. This being the case, the index numbers previously given, and repeated in this paper, are brought up to date in column 5 of Table II, and index numbers for articles of import are added in column 6, and the total of all prices, 111 in number, are given in column 7.

For this purpose the 11 articles with their index numbers, equated to 1868-76, given by the Commercial and Intelligence Department have been adopted. The 11 articles of import added to the 100 already given, represent 10 per cent. of the whole, which is little in excess of the share of imports to the internal trade of the country. The articles of import included are the following:—(1) iron, (2) copper, (3) spelter, (4) cotton grey skirtings, (5) cotton white yarn, (6) cotton coloured yarn, (7) raw silk, (8) sugar, (9) coal, (10) kerosine oil, and (11) salt. These articles together represent an import of Rs. 61,79,07,396 out of a total import of Rs. 117,24,21,968 in 1906-7.

3. *Index numbers* 1871 = 100.

Table I gives a continuation of the index numbers on the basis on which they were originally drawn out. The year 1871 was originally taken to represent 100, because the index numbers of Mr. Sauerbeck's gold prices in England were 100 in that year, and the price of silver approximated to it (99·7). This method had the advantage of readily comparing the course of rupee with gold prices, and was useful in connection with the currency question. Prices of a single year cannot, however, be regarded as representing normal prices, and rupee prices in 1871 were exceptionally low. Currency considerations are no longer under discussion, whilst the steady rise of silver prices renders it necessary to make the comparison with an average of years, and this is done in Table II.

Table I.—*Index numbers*, 1871 = 100.

Year.	Index numbers (percentages). Rupee prices 1871 = 100.				Sauerbeck's gold price. Commodities. 1867-77 = 100.	Gold price. Silver. 60·84*d*. per oz. = 100.	Gold price. Rupee. 23·34*d*. = 100.
	Food. 60 items.	Raw produce. 29 items.	Manufactures. 11 items.	All prices. 100 items.			
1900....	178	121	98	153	75	46	68
'01....	173	118	100	149	70	45	68
'02....	154	114	106	137	69	40	69
'03....	145	114	102	131	69	41	69
'04 ..	138	116	111	129	70	43	69
'05....	163	117	114	144	72	46	69
'06....	195	129	132	169	77	51	69
'07....	208	135	136	179	80	50	69
'08....	237	128	115	192	73	40	68

4. *Index numbers* 1868-76 = 100.

Mr. Sauerbeck, when preparing his figures for gold prices, took, for the reasons stated by him, the averages of the eleven years 1866-77 as the basis of his calculations, *i.e.*, he treated the averages of these years as normal prices, and gave each the index number of 100. It would not, however, give a true normal figure to take the same years for India, because prices were high in 1867, as a result of the deficient rainfall of 1866, and similarly 1877 was an abnormal year. The nine years 1868-76 may, however, be regarded as fairly normal years, though the rainfall was deficient in 1868, and prices high in 1869, but this was counteracted by the good years that followed. The year 1873 was also deficient, but this did not affect prices appreciably, as the deficiency was comparatively slight, the year followed a very good year, and the tracts affected were fed by grain imported from Burma.

TABLE II.—*Index numbers of prices*, 1868-76 = 100.

1	2	3	4	5	6	7	8	9	10	11	12	13
Year.	Index numbers (percentages) of rupee prices in India—average of 1868-76 = 100.				Index number. 11 articles, of import.	Index number. 111 articles, including 11 imports.	Sauerbeck's gold prices, average 1867-77 = 100	Gold price of silver, 60·84*d.* per ounce = 100.	Gold price of rupee, 23·34*d.* = 100.	Index number of articles of export, 1868-76 = 100.	Sauerbeck's gold prices index number. 11 articles import given in column 6.	Sauerbeck's gold prices index number 11 articles exported by India.
	Food. 60 items.	Raw produce. 29 items.	Manufactures. 11 items.	All prices. 100 items.								
1868-76	100	100	100	100	—	—	—	—	—	100	—	—
1870	104	103	106	*105*	100	*105*	96	100	100	103	—	—
'71 ...	85	99	106	*91*	93	*91*	100	100	100	97	—	—
'72	91	103	105	*95*	96	*95*	109	99	99	101	—	—
'73	96	99	100	*97*	105	*98*	111	97	99	102	—	—
'74 ...	107	103	105	*105*	104	*105*	102	96	96	108	—	—
'75	92	96	100	*94*	95	*94*	96	93	93	98	—	—
'76	98	98	88	*97*	96	*97*	95	87	87	96	—	—
'77 ...	142	102	90	*125*	93	*122*	91	90	90	105	—	—
'78 ...	155	102	93	*135*	88	*130*	97	86	86	107	—	—
'79	137	104	95	*123*	87	*119*	83	84	84	109	—	—
1880	108	108	103	*106*	93	*105*	88	86	86	106	—	—
'81 ...	93	103	102	*96*	90	*95*	85	85	85	100	—	—
'82	93	100	97	*95*	89	*94*	84	85	85	96	—	—
'83 ...	96	100	97	*96*	83	*95*	82	83	83	97	—	—
'84	107	100	91	*104*	82	*102*	76	83	83	100	—	—
'85	107	98	85	*103*	79	*101*	72	80	80	94	—	—
'86	103	99	90	*100*	84	*98*	69	75	75	93	—	—
'87	103	101	96	*101*	87	*100*	68	73	73	97	—	—
'88 ...	111	106	100	*108*	97	*107*	70	70	70	101	—	—
'89 ...	116	111	109	*114*	96	*112*	72	70	70	106	—	—

TABLE II.—*Index numbers of prices*, 1868–76 = 100—*Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13
Year.	Index numbers (percentages) of rupee prices in India—average of 1868–76 = 100.				Index number. 11 articles, of import.	Index number. 111 articles, including 11 imports.	Sauerbeck's gold prices, average 1867-77 = 100	Gold price of silver, 60·84*d.* per ounce = 100.	Gold price of rupee, 23·34*d.* = 100.	Index number of articles of export, 1868-76 = 100	Sauerbeck's gold prices index number. 11 articles import given in column 6.	Sauerbeck's gold prices index number. 11 articles exported by India.
	Food. 60 items.	Raw produce. 29 items.	Manufactures 11 items.	All prices. 100 items.								
1890	118	108	102	*114*	96	*112*	72	78	78	103	—	—
'91 ...	123	106	100	*116*	88	*113*	72	74	74	105	—	—
'92 ...	138	115	103	*128*	88	*124*	68	65	65	115	—	—
'93 ...	131	117	113	*125*	94	*122*	68	58	64	122	56	67
'94	121	118	116	*119*	88	*116*	63	48	57	116	48	63
'95	113	125	118	*116*	91	*114*	62	49	57	115	50	62
'96	133	120	111	*127*	99	*124*	61	50	61	113	54	64
'97	171	114	103	*149*	90	*143*	62	45	65	115	54	64
'98	131	90	98	*122*	84	*118*	64	44	68	102	53	66
'99	122	111	102	*117*	91	*114*	68	45	69	102	61	67
1900	152	120	104	*139*	102	*135*	75	46	68	112	74	69
'01	148	117	106	*135*	101	*132*	70	45	68	110	62	63
'02	131	113	112	*124*	90	*121*	69	40	69	110	58	64
'03	124	113	108	*119*	93	*116*	69	41	69	108	65	66
'04	118	115	118	*117*	98	*115*	70	43	69	114	67	67
'05 ...	139	116	121	*130*	101	*127*	72	46	69	113	66	70
'06	167	128	140	*153*	110	*149*	77	51	69	128	68	75
'07	178	134	144	*162*	122	*158*	80	50	69	136	75	75
'08	202	127	122	*174*	113	*168*	73	40	68	131	65	69

5. *Rupee prices.*

The facts that at once present themselves on a glance at Table II, whether column 5 or column 7 is considered, are that prices have risen since 1887, that the rise has not been regular, and that a very high level of prices, as compared with the years prior to 1888, has been reached. This is a matter which is now receiving great attention in India, and it has been suggested that a Commission should be appointed to enquire into it. In this view it is proposed to make a brief enquiry into the question in this paper. Fluctuations in prices in India may be the result of any of the following causes separately, or in combination :—

(*a.*) The excess or the deficiency of the rainfall.

(*b.*) The excess or the deficiency in the circulation of the currency.

(*c.*) The export of food stuffs causing an excess of demand over supply within the country.

(*d.*) The export of wheat as a dominant factor in raising all prices.

(*e.*) A rise in wages causing an increase in the cost of production, and thus raising prices.

(*f.*) An excess of imports adversely affecting the balance of trade.

(*g.*) An excess of capital flowing into the country.

(*h.*) The action of dealers in causing an artificial rise in prices.

(*i.*) The extension of railways.

(*j.*) A rise of prices outside India either of imports into, or of exports from India.

It is proposed, therefore, to briefly consider each of these conditions in order to determine, if possible, the cause of the present high level of prices. To bring the matter properly together, and as complete as possible, in one paper, it becomes necessary to repeat some of the figures given, and arguments offered, in the previous papers on Silver Prices in India. It may be interesting to note here that prices in 1908, as compared with the year 1600, during the reign of Akbar, were approximately as follows :—Ghee 15 times as high, wheat and barley 12 times, moung 9 times, rice 5 times, and sugar double.

TABLE III.—*Index numbers of rainfall in India. Average of* 1861 *to* 1895 (*thirty-five years*) = 100.

Rainfall division.	Average rainfall in thirty-five years 1861-95.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.
1. Punjab	ins. 22·2	75	78	111	94	91	132	100	110	114	76	73	100	96
2. United Provinces	39·8	128	137	103	89	121	99	79	56	86	124	67	90	84
3. Madras and Mysore	60·1	92	109	107	96	124	84	72	108	118	100	100	79	121
4. North, West, and Lower Bengal	53·8	105	124	87	80	106	93	103	98	100	102	109	107	91
5. East Bengal and Assam	97·5	98	98	104	79	104	102	96	94	111	104	113	127	104
6. Central Provinces and Berar	43·9	105	79	107	83	96	109	80	90	114	94	86	106	104
7. Bombay	86·8	98	77	102	90	121	111	77	76	130	101	73	90	88
8. Rajputana and Central India	36·3	96	114	98	100	105	120	105	60	93	99	79	98	106
9. Hyderabad Deccan	31·5	115	52	110	83	95	103	54	82	133	106	98	86	100
10. Lower Burma	139·6	93	113	90	93	84	105	87	101	97	100	102	101	104
Total	61·1	1,005	981	1,019	887	1,047	1,058	853	875	1,096	1,006	900	984	998
Average index number	100	100	98	102	89	105	106	85	87	110	101	90	98	100

TABLE III.—*Index numbers of rainfall in India. Average of* 1861 *to* 1895 (*thirty-five years*) = 100—*Contd.*

Rainfall division.	Average rainfall in thirty-five years 1861-95.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.
1. Punjab	ins. 22·2	77	98	100	100	90	85	92	107	85	113	136	134	87
2. United Provinces	39·8	73	105	112	106	101	115	109	114	109	95	119	149	96
3. Madras and Mysore	60·1	107	94	106	96	105	107	112	88	85	113	101	97	101
4. North, West, and Lower Bengal	53·8	86	79	106	116	98	98	100	110	87	89	129	104	83
5. East Bengal and Assam	97·5	92	82	96	112	98	104	129	110	83	108	103	104	92
6. Central Provinces and Berar	43·9	127	126	102	98	129	88	102	101	112	116	116	111	91
7. Bombay	86·8	113	100	94	110	111	106	110	116	86	121	102	102	88
8. Rajputana and Central India	36·3	82	117	99	90	115	90	106	93	95	120	122	114	78
9. Hyderabad Deccan	31·5	132	106	103	131	99	81	114	109	75	160	170	112	120
10. Lower Burma	139·6	97	93	99	93	90	103	90	89	98	88	99	103	83
Total	61·1	986	1,000	1,017	1,052	1,036	997	1,064	1,037	915	1,123	1,197	1,130	918
Average index number	100	99	100	102	105	104	98	106	104	91	112	120	113	92

TABLE III.—*Index numbers of rainfall in India. Average of* 1861 *to* 1895 (*thirty-five years*) = 100—*Contd.*

Rainfall division.	Average rainfall in thirty five years 1861-95.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.
1. Punjab	ins. 22·2	60	83	84	40	111	82	72	90	77	71	107	86	136
2. United Provinces	39·8	60	104	109	89	93	82	83	104	96	69	98	63	83
3. Madras and Mysore	60·1	110	117	104	79	103	104	113	122	95	92	99	109	88
4. North, West, and Lower Bengal	53·8	81	104	112	118	110	94	100	88	105	119	100	93	84
5. East Bengal and Assam	97·5	80	97	92	108	84	92	109	97	104	110	110	93	85
6. Central Provinces and Berar	43·9	101	95	87	46	106	100	71	108	77	83	106	90	168
7. Bombay	86·8	110	107	96	52	106	93	96	101	81	63	81	96	92
8. Rajputana and Central India	36·3	83	83	90	34	112	71	78	83	88	51	94	76	104
9. Hyderabad Deccan	31·5	74	74	97	52	98	102	90	153	85	86	110	92	111
10. Lower Burma	139·6	99	91	89	85	92	89	78	86	102	92	81	100	93
Total	61·1	858	955	960	703	1,015	914	893	1,037	910	839	986	898	984
Average index number	100	86	95	96	70	101	91	89	104	91	84	99	90	98

6. *The rainfall of India.*

Table III gives the index numbers of the rainfall of India from 1870 to 1908, based on the average rainfall of the thirty-five years 1861 to 1895. India is divided into 22 meteorological divisions, which have been grouped for the purposes of the index numbers into 10 divisions. In 1861 the 22 divisions contained 97 stations, 290 in 1878, 375 in 1890 and so on, the number increasing almost annually; the averages given, therefore, do not necessarily give absolutely accurate comparisons, but are sufficiently so to justify acceptance of them as correct. The number of divisions themselves was increased in 1907.

India is self-contained in the matter of food, and, with the exception of sugar, provisions and spices, imports none, consequently any circumstance which affects the internal supply necessarily also affects prices, and as the annual crops are dependent almost entirely on the rainfall, a full or a deficient rainfall necessarily affects prices. Artificial irrigation assists the rainfall when and where deficient, but in most tracts this irrigation would be of little use if no rain fell for it to supplement. In considering the effect of the rainfall of the year on prices, it must be remembered that the rains commence in India ordinarily about the middle of June in each year, and continue up to the middle or end of September. They may, however, be late, and provided they arrive before the end of August, and a good fall follows, they prove as equally beneficial to grain production as the earlier rains. Consequently the actual effects of a bad rainfall in any year do not show themselves till August or September, though prices may rise earlier if the rains are late. These effects continue in full force till the following June, and if good rains are experienced then and in the following months, prices begin to fall, but they do not ordinarily revert to normal conditions till November or December. Thus the effects of a bad rainfall in any year are felt for about four months of that year, and for about ten months of the following year. Comparing Table III, the rainfall, with Table II, column 2, the price of food grains, we find the following results :—

In 1873 rainfall was 11 points deficient, and prices rose slightly in that year, and were 7 per cent. in excess in 1874. In 1876 and 1877 the rainfall was 15 and 13 points deficient respectively. Prices rose slightly in 1876, but were 42 and 55 per cent. in excess in the two following years respectively. In 1878 the rainfall was 10 points in excess, but there was a heavy deficiency in the United Provinces, and the short crops of the two previous years caused prices to remain at a high level in 1879. From 1879 to 1882 the rainfall was practically normal, except in 1880, when the deficiency was 10 per cent., but following good years, the deficiency in certain provinces was made good by good crops elsewhere. In 1883 the rainfall in the United Provinces, Punjab and Lower Bengal was seriously deficient, and prices rose 11 per cent. in the following year. From 1884 to 1890 the rainfall was normal, but prices commenced to rise in 1888, and by 1890 were 18 points above normal. This rise must have been due to causes other than the rainfall.

In 1891 the rainfall was 9 points deficient, and prices rose 15 points in 1892. The years 1892, 1893 and 1894 experienced bumper rainfalls, and prices fell 25 points in 1895 as compared with 1892. The year 1895 was 8 points deficient, and prices rose 20 points in 1896 to the level of the 1893 prices. In 1896 serious deficiencies occurred in the rainfall in the Punjab, United Provinces, Bengal, Assam and Hyderabad, and prices rose in 1897 by 38 points. 1897 and 1898 were practically normal years, and prices fell 40 points in 1898, and a further 9 points in 1899.

The year 1899 experienced the most serious deficiency in rain during the whole period from 1861 to 1908. It was 30 points below normal, and as Bengal and Assam were considerably above, the remainder of India suffered severely, with the result that food prices rose 30 points in 1900. The year 1900 was normal with good rain in provinces requiring it, and prices began to fall. 1901 and 1902 were both deficient, the Punjab and the United Provinces both suffering in both years, but food prices continued to fall. 1903 had a normal fall, and prices continuing their fall reached 118 in 1904, or 34 points lower than in 1900.

The years 1904 and 1905 were deficient 9 and 16 points respectively, the Punjab, Central Provinces and Bombay suffering in both years severely, and the United Provinces and Central India in 1905. Prices rose 21 points in 1905, and a further 28 points in 1906. Some of this rise was due to the short rainfall, but it is very improbable that the whole of it could have been, and other causes must have played a part in the result.

The year 1906 was normal, all provinces except Bombay sharing in the good rain. Prices, however, continued to rise in 1907, and were 11 points higher than in 1906. The rise was partially due to the late and insufficient rain of 1907, and felt in the last four months of that year, but other causes must have played some part.

The year 1907 showed deficient rain in the United Provinces, Central India and Punjab, and prices ruled high in 1908, falling slightly at the end of the year in consequence of a fairly good rainfall in 1908. Prices are, however, still ruling high in 1909, though stocks are said to be plentiful, and reasons other than the rainfall must be assigned for the present state of things.

The years 1861 to 1895 gave an average rainfall with an index number of 100. The years 1870 to 1908 gave a rainfall with index number 98, and whilst the years 1870 to 1894 (twenty-five years) gave an average index number of 101, the fourteen years from 1895 to 1908 show an average of 92 only. During this latter period only two years were above normal, 101 in 1900, and 104 in 1903, and the circumstances of this period appear to indicate that the rainfall is not so good in India as it was in former years. It is not possible to make any suggestion as to the cause of this, but the Meteorological and Forest Departments of India might give some information on the subject.

This review clearly indicates that the rainfall has always had a powerful influence in regulating food prices in India, but that other influences have played a part in the rise of prices in certain years, and the review shows that the present high level of prices is not entirely, if at all, due to deficiencies in the rainfall.

7. *The active monetary circulation in India.*

An estimate of the rupee circulation of India was given in the Paper on Silver Prices in the *Journal* of March, 1897. This was revised from further information received and published in the *Journal* for March, 1903. Since then the 1835 and 1840 rupees have been called in, and it appears from the number received up to date, as will be explained later, that the melting of rupees into ornaments was considerably underestimated in the earlier years. Allowance has now been made for this, and for other changes necessary in the light of the withdrawal of the 1835 and 1840 coin, and a revised estimate is now given. It will, however, be noticed, as shown in the previous estimates, that the circulation has shown a great increase, sometimes remaining steady for a time, sometimes falling slightly, and sometimes rising, often in leaps.

In addition to the rupee circulation, the circulation of small silver coin is an important item in India, since wages are so low, and the circulation of the poorest classes is as much in small coin as it is in rupees.

Since 1889 sovereigns have been legal tender, and have been in circulation, and must therefore be included in the active circulation of the country in considering its effect on prices.

Table IV gives the estimated active monetary circulation of India for each year from 1835-36. Table V gives the details of the working of the estimated rupee circulation from 1893-94, the year in which the mints were closed, and Table VI gives the estimate of the sovereign circulation, subject to the remarks made in Section 11 of this Paper.

TABLE IV.—*Active monetary circulation.*

Year.	Active circulation, in crores of rupees.	Year.	Active circulation, in crores of rupees.	Year.	Active circulation, in crores of rupees.
1835–36	24	1860–61	56	1885–86	126
'36–37	23	'61–62	56	'86–87	128
'37–38	23	'62–63	63	'87–88	131
'38–39	26	'63–64	73	'88–89	133
'39–40	26	'64–65	86	'89–90	135
1840–41	26	'65–66	99	1890–91	139
'41–42	27	'66–67	105	'91–92	141
'42–43	26	'67–68	106	'92–93	149
'43–44	25	'68–69	109	'93–94	143
'44–45	26	'69–70	113	'94–95	145
'45–46	28	1870–71	107	'95–96	150
'46–47	25	'71–72	101	'96–97	153
'47–48	26	'72–73	101	'97–98	152
'48–49	23	'73–74	101	'98–99	150
'49–50	21	'74–75	105	'99–00	166
1850–51	20	'75–76	101	1900–01	171
'51–52	19	'76–77	104	'01–02	170
'52–53	21	'77–78	114	'02–03	175
'53–54	23	'78–79	118	'03–04	188
'54–55	24	'79–80	123	'04–05	200
'55–56	26	1880–81	124	'05–06	215
'56–57	32	'81–82	120	'06–07	241
'57–58	40	'82–83	119	'07–08	242
'58–59	50	'83–84	119	'08–09	223
'59–60	53	'84–85	120		

TABLE V.—*Course of rupee circulation after*

[00,000's

Receipt.	1893-94.	1894-95.	1895-96.	1896-97.	1897-98.	1898-99.
1. Rupees coined in mint	4,14	—	—	—	49	42
2. Rupees imported sea	64	84	74	1,02	1,11	48
3. Rupees imported inland	5	8	—	21	—	—
4. Rupees received from treasuries (cash balances reduced on 31st March)	—	3,04	6,03	2,63	—	—
5. Rupees received for currency investments	—	—	—	2,00	—	—
6. Rupees received from hoards replaced by bullion	2,50	1,18	1,60	1,58	2,22	65
7. Rupees received from paper currency for gold deposited in India	—	—	—	—	26	2,80
8. Rupees received from paper currency for gold deposited in England	—	—	—	—	—	—
9. Rupees received for silver bullion deposited in India	—	—	—	—	—	—
10. Rupees received from treasury for gold	—	—	—	—	—	—
Total receipts	7,33	5,14	8,37	7,44	4,08	4,35
Disposal.						
11. Rupees exported sea	43	1,37	1,10	1,61	1,54	2,02
12. Rupees exported inland	—	—	6	—	23	6
13. Rupees paid to treasuries (cash balances increased on 31st March)	10,29	—	—	—	2,11	78
14. Rupees sent to mint for re-coinage	21	6	27	63	59	30
15. Rupees coined for native states	6	—	—	—	49	42
16. Rupees hoarded	2,12	2,16	2,21	1,50	1,80	2,39
17. Rupees paid to paper currency to take place of gold in India	—	—	—	—	—	—
18. Rupees paid to paper currency to take place of gold in England	—	—	—	—	—	—
19. Rupees paid to silver bullion India	87	—	—	—	—	—
20. Rupees paid to treasury for gold	—	—	—	—	—	—
21. Rupees paid to gold standard reserve	—	—	—	—	—	—
Total disposal	13,98	3,59	3,64	3,74	6,76	5,97
Balance increase in circulation	—	1,55	4,73	3,70	—	—
Balance decrease in circulation	6,65	—	—	—	2,68	1,62
22. Active rupee circulation 1892–93 = 141 crores	1,34	1,36	1,41	1,44	1,42	1,40
23. Active small silver coin circulation 1892–93 = 8 crores	9	9	9	9	10	10
24. Active sovereign circulation 1892–93 = 0 (see explanation, section 11)	—	—	—	—	—	—
25. Total active circulation 1892–93 = 149 crores	1,43	1,45	1,50	1,53	1,52	1,50
Average value of rupee in pence	14·556	13·100	13·401	14·433	15·366	15·972
Average value of silver bullion in Bombay less import duty—annas per tolah	14·31	14·14	14·59	13·60	11·45	11·14

closure of mints to free coinage—in lakhs of rupees.

omitted.]

1899-1900.	1900-01.	1901-02.	1902-03.	1903-04.	1904-05.	1905-06.	1906-07.	1907-08.	1908-09.
1,30	17,15	4,95	11,27	16,17	10,88	19,60	25,37	17,32	2,51
46	52	88	51	83	62	33	74	1,21	88
36	—	—	—	—	—	—	—	—	—
4,13	—	—	—	28	1,68	—	2,18	—	3,87
—	—	—	—	—	—	—	—	—	—
1,07	50	1,77	3,49	1,40	1,99	99	43	—	—
8,20	—	1,87	4,25	1,40	—	—	—	—	—
2,25	—	—	—	—	—	10,57	—	—	—
—	1,77	—	—	53	1,17	—	2,11	—	—
44	—	—	5	1	11	1	—	1	—
18,21	19,94	9,47	19,57	20,62	16,45	31,50	30,83	18,54	7,26
1,43	1,40	1,23	1,16	1,42	1,23	1,11	2,00	1,60	1,18
—	5	2	3	3	4	4	6	5	4
—	3,26	1,93	31	—	—	1,55	—	3,79	—
76	31	1,26	8,05	5,29	3,49	3,05	2,62	2,33	2,50
30	2,09	1,90	2,99	12	6	3	4	1	1
1,20	2,50	1,80	2,00	2,55	2,00	2,00	2,40	2,00	2,60
—	2,58	—	—	—	7	10,37	24	1,43	4,03
—	2,25	—	—	—	—	—	3	4,98	3,31
—	—	1,77	—	—	—	75	—	2,98	—
—	23	10	—	—	—	—	1	—	22
—	—	—	—	—	—	—	—	10	9,78
3,69	14,67	10,01	14,54	9,41	6,89	18,90	7,40	19,27	23,67
14,52	5,27	—	5,03	11,21	9,56	12,60	23,43	—	—
—	—	54	—	—	—	—	—	73	16,41
1,55	1,60	1,59	1,64	1,76	1,85	1,98	2,21	2,20	2,04
11	11	11	11	11	12	12	13	13	14
—	—	—	—	1	3	5	7	9	5
1,66	1,71	1,70	1,75	1,88	2,00	2,15	2,41	2,42	2,23
16·069	15·981	15·982	16·002	16·047	16·045	16·042	16·087	16·029	15·931
11·14	11·42	10·79	9·51	10·50	10·89	11·42	12·59	11·81	9·79

TABLE VI.—*The circulation of*

[000's omitted.

Receipts.	1894-95.	1895-96.	1896-97.	1897-98.	1898-99.	1899-1900.
1. Sovereigns imported	68,96	1,71,83	1,79,56	2,61,95	4,53,44	7,98,56
2. Received from Treasury	—	—	—	—	—	—
3. Received from Paper Currency Department	—	—	—	—	—	—
4. Received from gold standard reserve	—	—	—	—	—	—
5. Total	68,96	1,71,83	1,79,56	2,61,95	4,53,44	7,98,56
Issues.						
6. Sovereigns exported	11,55	4,42	5,45	4,70	1,38	1.31
7. Transferred to Treasury	—	—	—	—	—	43,65
8. Transferred to Paper Currency Department	—	—	—	—	—	6,61,52
9. Transferred to gold standard reserve	—	—	—	—	—	—
10. Melted and hoarded (column 15—column 14 to limit of sovereigns available)	57,41	1,67,41	1,74,11	2,57,25	4,52.06	92,08
11. Total	68,96	1,71,83	1,79,56	2,61,95	4,53,44	7,98,56
12. Difference between receipts and issues	—	—	—	—	—	—
13. *Circulation* of sovereigns	—	—	—	—	—	—
14. Net import gold bullion, plus production in country	−4,11,15	2,57,32	2,65,34	4,69,32	4,39,78	4,04,80
15. Estimated required for other than for currency purposes (see explanation, section ii)	—	—	—	—	—	6,00,00

8. *The Estimate of rupees melted into ornaments.*

Of the various items which have to be included in calculating the rupee circulation, the statistics furnish a guide to make a sufficiently accurate estimate for all heads with the exception of rupees melted into ornaments, and rupees hoarded. It is proposed to show how these heads have been arrived at before considering the course of the circulation, and its effect on prices.

Previous to September, 1835, the only rupees of legal tender in India were the Bombay, Madras, Farrukhabad, Sonat and Sicca rupees. Act xvii of 1835, which took effect from September 1, 1835, directed the coinage of the Company's rupee weighing 180 grains, and a standard fineness of eleven-twelths, or 165 grains of fine silver, and declared it equivalent to the Bombay, Madras, Farrukhabad and Sonat rupees, and to fifteen-sixteenths of the Sicca rupee. Act xiii of 1836 discontinued the Sicca rupee as legal tender. In *sovereigns in rupees.*

£1 = Rs. 15.]

1900-01.	1901-02.	1902-03.	1903-04.	1904-05.	1905-06.	1906-07.	1907-08.	1908-09.
6,73,46	5,27,60	8,71,88	12,98,43	13,03,49	5,19,17	8,04,14	9,66,87	1,61,87
23,17	7,47	—	—	—	—	69	—	21,73
—	—	—	—	7,41	10,37,89	26,70	14,3,28	3,99,64
—	1,80,00	—	—	6	—	—	3,26	—
6,96,63	7,15,07	8,71,88	12,98,43	13,10,96	15·57,06	8,31,53	11,13,41	5,83,24
99,57	2,64,24	1,14,88	6,53,66	8,57,65	10,65,92	61,50	1,78	68,12
—	—	4,86	1,47	10,97	1,42	—	37	—
71,97	3,04,71	4,28,54	1,51,69	—	—	—	—	—
1,80,00	—	—	6	—	—	3,26	—	—
3,45,09	1,46,12	1,84,93	—	—	—	—	—	—
6,96,63	7,15,07	7,33,21	8,06,88	8,68,62	10,67,34	64,76	2,15	68,12
—	—	1,38,67	4,91,55	4,42,34	4,89,72	7,66,77	11,11,26	5,15,12
—	—	1,38,67	6,30,22	10,72,56	15,62,28	23,29,05	34,40,31	39,55,43
−2,05,71	2,20,06	4,15,07	6,93,88	8,79,67	9,55,10	10,77,51	11,61,68	7,51,80
6,00,00	6,00,00	6,00,00	6,00,00	6,50,00	6,50,00	7,00,00	7,00,00	7,00,00

May 1838, the Bombay, Madras, Farrukhabad and Sonat rupees were declared to be still legal tender, but were receivable at the mint for recoinage without seigniorage. These coins were declared to be no longer legal tender from June 1, 1878. In 1896 the silver coins of 1835 (coined between 1835 and 1840) were called in, and in 1901, those of 1840, representing the coinage from 1840 to 1861, were similarly called in.

The coinage of rupees between the years 1800 and 1835 is recorded at 65¼ crores, and it may be assumed that the bulk of the coinage previous to 1800 had by 1835, either been returned to the mint for recoinage, or had otherwise been disposed of. Of this coinage about 23 crores is recorded as having been tendered to the mint between 1835 and 1876, and a certain amount of the coinage must have found its way to the mints before 1835, of which there is no record. Some must have been exported, and a small amount was possibly lost during the Mutiny, and some possibly still remains hoarded. Altogether it may be estimated that under 28 crores out of 65¼ crores of this coinage, or 40 per cent. was melted down for ornaments during the 76 years life of the coin, probably nearly the whole before 1840, allowing the new coin five years to circulate into the interior. This percentage appears high, but when the circumstances of the time are considered, the estimate is perhaps not excessive.

The 1835 coinage amounted to Rs. 16,39 lakhs of rupees, and the 1840 to Rs. 10,782 lakhs, making a total of Rs. 12,421 lakhs. It may be assumed that very little coin coined after 1861 was received at the mints for recoinage for the next twenty years. The total number of rupees and small silver (the statistics do not separate the two) received at the mints between 1835 and 1881 was Rs. 25,87 lakhs, of which about Rs. 24,50 lakhs may be estimated to have been rupees, and of this about Rs. 23,00 lakhs ante-1835 rupees, leaving Rs. 1½ crores of 1835 and 1840 rupees. From 1882-83 to 1895–96, the year in which the 1835 rupee was called in, rupees of all years sent to the mint for recoinage amounted to about Rs. 3¾ crores, and not less than three-fourths of this, or Rs. 280 lakhs must have been 1835 and 1840 rupees. From 1896-97 to 1901-02, the year in which the 1840 rupee was recalled, about half a crore of 1840 rupees were received. Since the recall of the rupees, Rs. 3½ crores of 1835 rupees, and Rs. 25¾ crores of 1840 rupees have been received at the mints. This altogether accounts for Rs. 34 crores, and it may be estimated that another Rs. 10 crores will eventually be received, making a total of Rs. 44 crores in all.

The total amount of silver exported by sea between 1835 and 1862, the year during which this coinage proceeded, amounted to nearly Rs. 23 crores. The statistics show that the gross imports of silver bullion up to 1857-58 went to the mints for coinage, and the export of silver up to that date, amounting to Rs. 17½ crores must have been entirely in rupees. During the mutiny years, there was apparently a net import of coined rupees, but the net export up to 1863 was about Rs. 18 crores. To this must be added the export inland across the frontier, which may be estimated at Rs. 3 crores, making an aggregate export of Rs. 21 crores.

It has already been stated that the entire import of silver bullion up to 1857-58 went to the British mints, the coinage in the native mints during this period must therefore have been entirely from coined British rupees. The coinage at the native mints before 1891 is not recorded, but some indication of the amount can be obtained from the amount recalled since that date. The old coin so recalled and received amounted to Rs. 16½ crores, and a quantity of the old coin must still be outstanding, and after making all allowances, melting into ornaments, &c., it seems probable that the native mintage up to 1891 amounted to about Rs. 50 crores, of which, say one-fifth, or Rs. 10 crores may be estimated to represent 1835 and 1840 rupees melted down.

The 1835 (five years) and 1840 coinages (twenty-two years) thus work out as follows:—

	Rupees.	Rupees.
Coined	—	1,24,00,00,000
1835 and 1840 coin returned to mint, 1835-81	= 1,50,00,000	
1835 and 1840 coin returned to mint, 1882-95	= 2,80,00,000	
1840 coin returned to mint, 1896-1901	= 50,00,000	
1835 coin returned to mint, 1896-1908	= 3,50,00,000	
1840 coin returned to mint, 1901-08	= 25,70,00,000	
Estimated further expected receipts	= 10,00,00,000	
Exported sea and inland	= 21,00,00,000	
Estimated melted in native mints	= 10,00,00,000	
Lost in Mutiny, or otherwise unaccounted for	= 6,00,00,000	
		81,00,00,000
Balance unaccounted	—	43,00,00,000

From these estimates it would appear that Rs. 43 crores, equal to about 34½ per cent. of the 1835 and 1840 coinages, were melted down into ornaments. This at first sight appears excessive, as in addition to about Rs. 18 crores of bullion, apparently used for the purpose between 1858 and 1866, allowing five years for the circulation of the new coin, it means an average of nearly Rs. 2 crores a year, an apparently improbable figure when the extent of the population and poverty of the land are considered. On the other hand it is possible that at this period natives may have thought it wiser to turn their rupees into ornaments rather than to hoard them, and it is also possible that a considerable amount of this coinage, which had the appearance of looking larger than the succeeding issues of the rupee, may have been melted into ornaments and hoarded for many years after 1862, instead of the new coinage.

This latter suggestion is strengthened by the fact that the 1835 and 1840 rupees recently received at the mints amounting to Rs. 29¾ crores, plus the additions that may be expected for several years to come, are popularly believed to have been taken out of hoards, and the inference is that all such rupees in hoards must have been placed there during the issue of the coinage, as natives ordinarily prefer to hoard new coin to old. This would imply that some 40 crores of rupees were hoarded up to, say 1863, and if this had actually been the case, a reference to the estimate of the rupee circulation during the period, after allowing Rs. 12 crores already estimated as hoarded up to 1863, will show the circulation reduced too low in certain years to enable the trade of the Empire to have been carried on. The probabilities appear to be that this coinage remained in circulation, and was both hoarded and melted into ornaments for many years after 1862.

As regards the coin melted into ornaments from the coinages since 1862, the coinage from that year to 1892, the year before the mints were closed (thirty-one years) amounted to Rs. 203½ crores. If the number of those rupees melted down for ornaments was in the same proportion to the coinage, as appears to have been the case for the issues between 1835 and 1861, namely 34 per cent., the coin melted down would amount to over Rs. 81 crores, or an average of over Rs. 2½ crores a year, and with the bullion that must have been used for the purpose, about Rs. 60 crores, or an average of over Rs. 4½ crores a year. This estimate is clearly excessive. If Rs. 81 crores were taken for this period it would mean, with the previous figures, that Rs. 124 crores coined silver money and about Rs. 76 crores in silver bullion, making Rs. 200 crores in all, had been utilized between 1833 and 1892 for ornaments, representing about Rs. 9*s.* worth of silver ornaments in the hands of every man, woman and child in British India in 1892, or nearly Rs. 19*s.* per head for every female including children. This is in addition to 30 million sterling in gold (Rs. 45 crores) the bulk of which must also have been utilized in ornaments. It may therefore be assumed, after allowing for the use of a considerable number of the 1840 coin for ornaments during the period, that the rupee consumption of the 1862-1892 coin for ornaments did not exceed Rs. 40 crores, which with the bullion used for the purpose makes an annual average of nearly Rs. 3 crores.

As regards the period 1893 to date, after the mints were closed, the rupee became of higher value than the bullion it contained, and the practice of making ornaments out of coined rupees must very soon have ceased.

9. *The estimate of rupees hoarded.*

On the question of rupees hoarded, taking the coinage previous to 1835, which was called in in 1838, we find that about Rs. 23 crores of the coinage found its way to the mints by 1878, when it ceased to be legal tender. This, however, is no guide to the amount hoarded previous to 1835, as much of the coin was necessarily in circulation, and gradually found its way to the mints without going into hoards, especially as the bulk was received between 1835 and 1854.

The 1835 coinage, amounting to nearly Rs. 16½ crores, was the coin hoarded between 1835 and 1840. This coinage was called in in 1896, and it may be assumed that the great bulk of what was tendered at the Mints after that date represented rupees taken out of hoards, and replaced by bullion or new rupees. The amount received up to the end of 1908-09 was Rs. 3½ crores, representing 21 per cent. of the coinage, and suggests hoarding at an average of Rs. 70 lakhs a year. The 1840 coinage amounted to Rs. 10,782 lakhs, and was called in in 1901, and up to March, 1909, Rs. 25¾ crores had been received, equal to about 24 per cent. of the coinage, or an annual average of Rs. 117 lakhs a year for the twenty-two years during which the coin was being issued. In the case of both these coins, however, it has already been suggested that it would have been impossible to hoard during the period 1835-1862 all the coin of that coinage received at the Mints since 1896, and believed to have come out of hoards. In both cases, especially in that of the 1840 rupee, the probabilities are that this coinage was put into hoards for many years after 1861. Next taking the period 1862 to 1892, the coinage amounted to Rs. 2,03,50 lakhs, and if we take 24 per cent. as hoarded, the amount hoarded was nearly Rs. 49 crores, equal to Rs. 157 lakhs a year. This estimate appears possible, if the prosperity of the country during the period is considered. The amount hoarded of course increased annually as the population and wealth of India increased, and it may be estimated that commencing with Rs. 70 lakhs in 1862, the amount hoarded gradually reached 2 crores by 1892.

10. *The circulation of small silver coins.*

The small silver coins of India consist of the half rupee, which is legal tender for any amount, one quarter rupee, and one eighth rupee. The circumstances of India are such, wages being comparatively so low, that the circulation of small silver coin might at any time, if issued in too large, or too small quantities, assist in inflating or contracting the currency, and consequently in estimating the total active monetary circulation, the circulation of small silver coins should be included.

The small silver coinage from 1835-36 to 1892-93 amounted to Rs. 16¼ crores, but it is not possible to say how much of this was returned to the Mint for re-coinage, as no statistics were kept, nor how much was lost, or used for other purposes. It may however be estimated that about one half was either returned to the Mint, lost, utilized in ornaments, or otherwise disposed of.

From 1893-94 to 1908-09, the coinage amounted to Rs. 685 lakhs, and the face value received at the Calcutta Mint for re-coinage was Rs. 53 lakhs, whilst that received at the Bombay Mint was Rs. 27 lakhs from 1900-01, no statistics having been previously kept. The circulation of this coinage, given as item No. 23 in Table V, has accordingly been estimated on these figures, after making allowances for loss, &c.

11. *The circulation of sovereigns.*

By Notification No. 3287 dated 28th October, 1868, sovereigns and half-sovereigns, English or Australian, of current weight, were made receivable at Government treasuries in payment of sums due to Government, as the equivalent of 10 rupees 4 annas, and 5 rupees 2 annas, respectively. The fall in the gold value of the rupee prevented this Notification from ever being put into force.

By Notification No. 2663, dated 26th June, 1893, sovereigns and half-sovereigns were declared receivable at Government treasuries in payment of sums due to Government at the rate of Rs. 15 and Rs. 7½ respectively, and by Act 22 of 1899, passed on 15th September, 1899, sovereigns and half-sovereigns were declared to be legal tender at the same rates. The effect of this measure was that sovereigns began to be presented at the treasuries from September, 1899, and from that date the importation of sovereigns commenced to increase.

The net import of gold, sovereigns and bullion, plus the production in the country, during the ten years 1899-1900 to 1908-09, amounted to about Rs. 111 crores (at 1*l.* = Rs. 15), and of this Rs. 47,37 lakhs = 31,579,000*l.*, was in sovereigns and half-sovereigns. This heavy import, if it had all been added to the circulation of the country, would have made a very material difference in the question of the inflation of the currency, and it is necessary therefore to ascertain from such information as may be available, how much of this import went into circulation, and this has been worked out in Table VI.

All the factors in the estimate are known except item No. 10, Sovereigns melted and hoarded, but this factor is of great importance in framing an estimate of the gold circulation. The only way to form a rough estimate is to take the amount of gold net imported during a previous period, and to treat that as a basis of gold requirements in India for purposes other than currency.

The net import of gold during the ten years 1882 to 1891, before the closing of the Mints was 32,320,000*l.* in value, equivalent at 16*d.* to the rupee to Rs. 48½ crores. To this must be added the production in India. The production before 1891 is not recorded; in

1891 it amounted to 475,000*l.*, but as gold was produced throughout the period, it may be estimated that the total production during the ten years approximated 3,400,000*l.*, equal to Rs. 5 crores, making the net import plus production 35,720,000*l.* equal to Rs. 53½ crores. This constituted an annual requirement of Rs. 535 lakhs for purposes other than currency. In the ten years immediately before the declaration of legal tender of sovereigns, 1890 to 1899, the net import amounted only to 26,775,000*l.* = Rs. 40 crores, or an annual requirement of Rs. 4 crores. But this period includes the years preceding and succeeding the currency legislation, when the economic conditions were in a state of transition, the price of silver in its relation to gold was falling, and actually fell to 12½*d.* to the rupee in 1894, and gold, which had to be paid for in silver, became an expensive luxury for even the richest in India, and during the three years 1892-93 to 1894-5 the net export of gold was over Rs. 6 crores. It is necessary therefore to take the period 1882-1891 when conditions were normal, and gold requirements in India for purposes other than currency were on an average Rs. 535 lakhs a year. Between 1882 and 1891, and 1889 to 1908, there was, however, a considerable difference in the condition of the country, the revenue returns show that it had grown richer, and though famine or scarcity were not uncommon during the period, trade increased enormously, and whatever may have been the fate of the poorer classes, the wealthy, the buyers of gold, unquestionably had grown richer, and must have required more gold, and to add to this, the fact that the metal could be purchased at most treasuries throughout a great portion of the period was a distinct incentive to purchase it by those who would not otherwise have done so. It may therefore be estimated that the average annual requirements during this period amounted to Rs. 600 lakhs at first, and subsequently reached Rs. 700 lakhs, and possibly the purchases were considerably higher during the last few years.

The figures worked out on this basis show that there was no circulation of sovereigns up to the year 1902-03. Gold was received in and paid from the treasuries during the three previous years, but the circulation was temporary only, and was practically absorbed as soon as the gold left the treasury. From 1902-03, the sovereign circulation rapidly increased to Rs. 39½ crores = 26,000,000*l.* by the end of 1908-09. As a matter of fact, however, sovereigns are practically out of circulation in the present year 1909, and a premium is asked for them in Calcutta and Bombay, and in all the principal towns of India. Sovereigns can still be obtained in small quantities in places, which indicates that there are still some in circulation, but the total cannot exceed Rs. 2 crores as an outside limit, and half a crore is probably nearer the mark. There must therefore be something very erroneous in the statement, though it is not possible to say where the error lies, as all the figures are recorded figures excepting hoarded and melted, and high figures have been estimated for that head. It would seem that the circulation could not have increased at the rate shown by the figures in Table VI during the years 1902-03 to 1908-09, and that either the gold was melted down or hoarded in larger quantities than estimated, or that sovereigns took the place of rupees in hoards. In any circumstance it was very remarkable with what rapidity sovereigns were withdrawn from the treasuries in 1908, and disappeared from circulation, and indicates that the actual circulation at the time was not so great as the figures suggested. In this view, the circulation of sovereigns for the purposes of the total circulation in Tables IV and V have been taken as 1, 3, 5, 7, 9 and 5 crores of rupees for the six years 1903-04 to 1908-09 respectively, and even these figures appear too high for the last two years.

12. *The course of the active monetary circulation.*

About Rs. 23 crores of the ante-1835 rupee were presented at the Mint for re-coinage after 1835, a total of Rs. 35 crores may therefore be estimated as the actual circulation, including the Treasury cash balances in 1835. The figures given in Table IV as the active circulation include rupees, small coin and sovereigns, but exclude the Treasury cash balances.

The estimates show that the actual circulation remained practically the same from 1835 to 1848, varying from 23 to 28 crores of rupees. During this period there was a severe famine in 1838, and war with China from 1839 to 1841. In 1845 the first Sikh war took place and the second in 1848, followed by the annexation of the Punjab in 1849. The wars appear to have depleted the country of money, and sufficient fresh stocks were not brought in, with the result that the circulation fell to Rs. 19 crores in 1851. Food prices were very low at this period, index number 71 in 1843, and again 71 in 1853, with intervening variations, a rise to 80 and 89 in 1845 and 1846 having been due to scarcity conditions, and the fall in the circulation does not appear to have affected prices to any appreciable extent. From 1852 to 1856 the circulation rose from 19 to 32 crores of rupees, but prices fell to 63 in 1855. In 1857 the circulation rose 8 crores, and in 1858 another 10 crores to 50. From 1858 to 1862 there was a further increase of 13 crores to 63, a rise to 73 crores in 1863, to 86 in 1864, to 99 in 1865 and to 105 in 1866. Altogether the circulation rose from Rs. 32 crores in 1856 to Rs. 105 crores in 1866, an increase of Rs. 73 crores in 10 years. From 1866 to 1876, the circulation ranged at practically the same amount, standing at Rs. 104 crores in the latter year.

The great rise in the circulation which commenced in 1857 did not affect prices in that or the following year, and the average of prices from 1843 to 1858, sixteen years, was 72, but a rise commenced in 1859, reaching 109 in 1865, and 130 in 1866. The high prices in 1866 and subsequent years were due to famine conditions and their results. From 1870 to 1876, prices remained practically the same at about 100.

The rapid increase of the circulation between the years 1856 and 1866 had, however, the effect of raising the level of prices from 72 (1843-58) to 100 (1868-76), the rise occurring between the years 1859 and 1865, and the new level of 100 may be regarded as having commenced in 1865. During this period, from 1857 to 1876, the Mutiny broke out in 1857, and continued through 1858, and coin was required to meet the heavy expenses connected with the payment of troops, &c., and to do this the British Government made a loan of 6¼ million £'s to India, resulting in heavy coinages in 1857-58, and 1859, and in addition rupees were found to import. This caused a rapid increase in the circulation. With the suppression of the Mutiny, and the transfer of the administration to the Crown, there commenced an era of commercial and industrial activity, and the country was rapidly developed by the construction of roads and railways, and extension of canals. The American War of Secession lasting from 1861 to 1865 gave a great impetus to the cultivation of cotton in India, high prices ruled, and large profits were derived. All these conditions required a large active circulation of the rupee, which led to heavy imports of silver and high coinages in 1863, 1864 and 1865, and when on return of normal conditions prices should legitimately have fallen again, a higher level was retained in consequence of the inflation of the currency relatively to its needs at lower prices. Thus high prices were not caused by excess of currency in the first instance, but the permanency of high prices, after the cause of them had disappeared, was the necessary corollary of the then inflated currency.

From 1877 the circulation again commenced to increase, and reached Rs. 131 crores in 1887, an increase of Rs. 27 crores in eleven years. Prices in 1877, 1878 and 1879 were abnormally high on account of famine conditions, but returned to 103 by 1887. From this it appears that the level of prices remained at 100 up to this year, and that the increase in the circulation between 1877 and 1887 was necessitated by the increase in the wealth and prosperity of the country, and did not constitute any inflation of the currency.

From 1888 the circulation rapidly increased to Rs. 149 crores in

1892, the year before the Mints were closed, an increase of Rs. 18 crores in five years, and during this period food prices rose from 103 to 138. During this period the rainfall was normal or in excess in 1888, 1889, and 1890, slightly deficient in 1891, but excess in 1892, and scarcity conditions had therefore little or nothing to do with the rise in prices. During these five years Rs. 57 crores of silver were net imported into India, and nearly 45 crores of rupees were coined. The years were prosperous, trade was good, and all the circumstances indicated that some increase in the circulation was necessary to meet the increase in population and wealth, but open Mints, and their expected closure to the free coinage of silver, led to silver bullion being imported in excess of necessary requirements, and this was taken to the Mints, with the result that more coin was coined and issued than was necessary, the currency became inflated, and prices rose.

The Mints were closed to free coinage in 1893, and in that year the circulation contracted by Rs. 6 crores, but rose again to Rs. 150 crores in 1895. No increase in the circulation for three years, assisted by bumper rainfalls and excellent crops in 1893 and 1894, caused prices to fall to 113.

It has been stated that prices commenced to rise in 1888, and with good rainfalls, and crops, they rose under normal conditions from 103 in 1887 to 118 in 1890. There was a slight deficiency in rain in 1891, the effects of which were felt in the following year, but out of all proportion to the extent of the deficiency, as food prices rose to 123 in 1891, to 138 in 1892, and fell only to 131 in 1893 in a bumper year succeeding another nearly as good. The year 1894 had another excellent rainfall, and prices fell to 121, and in 1895 with a year slightly deficient in rain, they reached 113. Thus after a series of years of splendid rain, and plentiful supplies, prices were not reduced to their former level. We therefore have the period 1888 to 1895, during which the level of prices must have been higher than the previous period. The rise in the level was apparently due to prosperity, and good trade requiring an extended currency which came at a time when India's open Mints attracted silver, then rapidly depreciating in the European market, in excess of actual requirements, and thus inflated the currency, and when the Mints were closed, and the economic conditions had resumed normality, the currency was still inflated in relation to the former conditions, and other forces coming into play, as will be suggested in the later sections of the paper, the result was the establishment of a higher level of prices. The level reached during the period 1888 to 1895 may be fixed at the average of those years, after eliminating famine conditions, approximately at 118.

The years 1896 and 1897 were affected by famine conditions, and the effects were still felt in 1898, though to a considerably greater degree than they apparently should have been. The years 1897 and 1898 had practically normal rainfalls, and prices fell during 1899 to the new level of 118 till the end of the year, when the serious deficiency in the rainfall of the year was realised, and prices rapidly rose, making the average of the year 122, followed by 152 and 148 in the two succeeding years. The level of prices may therefore be said to have remained at 118 up to 1899, and up to that year, from 1895 to 1898, the circulation remained practically the same.

The year 1900 had normal rain, 1901 and 1902 were deficient, 1903 normal, and 1904 slightly deficient. Food prices rose from 122 in 1899 to 152 in 1900, and 148 in 1901, due to famine conditions, but fell to 118 in 1904. The circulation rose from Rs. 150 crores in 1898 to Rs. 171 crores in 1900, partly by the deposit of gold in the Paper Currency Department, and release of rupees, and partly by a reduction in the cash balances, additional circulation being necessary to meet the famine conditions, the increase being Rs. 20 crores in two years. It fell to Rs. 170 crores in 1901, and rose to Rs. 175 crores in 1902, Rs. 188 crores in 1903, and Rs. 200 crores in 1904, an increase of Rs. 30 crores in three years. When normal, or nearly normal, conditions again returned, it would seem that this large increase inflated the currency, and although prices fell to 118 in 1904-05, it is probable that a higher level had then actually been reached. Looking at all the factors in the case it would seem that the level from 1900 to 1905 reached 125.

The year 1905 had a deficiency of 16 points in the rainfall, 1906 was normal, 1907 deficient, and 1908 normal. Food prices rose from 118 in 1904 to 139 in 1905, to 167 in 1906, to 178 in 1907, and to 202 in 1908. The circulation rose from Rs. 200 crores in 1904, to Rs. 215 crores in 1905, to Rs. 241 crores in 1906, and Rs. 242 crores in 1907, an increase of Rs. 42 crores in three years.

During this period the Agricultural Returns show that, crop deficiencies in certain years in certain areas notwithstanding, the country was in a prosperous condition, and this is further borne out by the fact that both internal and external trade was brisk throughout, the export of merchandise increasing from Rs. 98 crores in 1897-98 to Rs. 177 crores in 1907-08, and Government revenue came in in increased quantities. The great increase in trade and prosperity clearly required an extended currency, but the rise in the circulation was so rapid, and so great, that it must have been out of all proportion to the necessities of the case, the currency consequently became inflated, and the food prices of 1905-06 to 1908-09 rose considerably higher than the area sown, and yield of crops conditions of those years justified, and were apparently affected by the inflation of the currency.

During 1908 by the cessation of the rupee coinage, the absorption of Rs. 9¾ crores into the Gold Standard Reserve, the return of Rs. 7¼ crores into the paper currency for the gold previously held in the currency in England and in India, and the disappearance of the bulk of the gold circulation, partly counterbalanced by the reduction of Rs. 3¾ crores in the cash balances, contracted the currency at the end of 1908-09 by about Rs. 19 crores, making it Rs. 223 crores, which represents an increase of Rs. 73 crores in excess of the circulation of 1898-99, an excess which can still further bear a substantial reduction, though further reduction should necessarily be carried out with circumspection in order not to interfere with the free flow of trade. When prices reach a high level in times of prosperity, and not for reasons connected with short crops, it becomes a very difficult matter to reduce them, because by doing so, the various economic conditions attending a change in prices under normal conditions have to be modified, and this must necessarily temporarily interfere with the progress of trade. It is not possible to accurately estimate to what level prices have now reached, but it seems that the present level is now higher than 125, the assumed level of 1900 to 1904. Food prices rose further to 202 in 1908 though the conditions of the country certainly did not warrant this rise, but during 1909 there appears to have been some fall, and up to the present time (June, 1909) it appears to be about 15 per cent., which makes them 172. This however is no guide as to the actual level to which they should fall, but as a result of an examination of all the conditions, it would seem that the present natural level has now reached 135, even if it is not still higher.

The levels of prices that have obtained at different periods may therefore be shown as follows :—

	Index number food prices =
(1) From 1843 to 1858	72
(2) ,, '65 ,, '87	100
(3) ,, '89 ,, '98	118
(4) ,, 1900 ,, 1904	125
(5) ,, '05 to date	135 or higher

Thus we find that the rises in the level of prices from 72 to 100, from 118 to 125, and from 125 to 135, were in the first instance in consequence of a rise in price due to some special cause, war or famine, which in itself necessitated an increase in the currency, and being followed by prosperous years, the circulation increased more rapidly than circumstances necessitated, and resulted in the inflation of the currency, and when normal conditions returned, prices did not revert to their normal level, due to causes which will be presently discussed, but which were assisted by the highly inflated condition of the currency.

The rise in the level of prices from 100 to 118 was due to a period of prosperity at the time that silver was becoming rapidly depreciated, which resulted in the metal being imported into India, and coined, in excess of the needs of the country, and prices did not subsequently revert to their former level for the same reasons that governed the other increases in the level of prices.

13. *The export of food-stuffs causing an excess of demand over supply within the country and thus raising prices.*

This suggestion is the favourite argument with a certain section of Indian politicians as the cause of the rise in prices, and from this they argue that the export of food-stuffs should be prohibited, and prices would then fall to their natural level.

Table VII gives the production in, and imports of food-stuffs into India, with the exports, and the percentage of the exports on the production, plus imports, for the year 1887-88, and for the twelve years from 1895-96 to 1906-07. The year 1887-88 is given, as it was the last year in which the level of prices is estimated as having stood at 100, but the figures given for that year are less reliable than those for the remaining years given. The year 1895-96 was included in the period when the level of prices stood at 118, and prices were lower that year than in any other year during the period. Similarly in the year 1904-05 prices were lower than in any other year during the period of the estimated level of prices of 125. The years 1905-06, and 1906-07 belong to the 135 level. For purposes of comparison, it is necessary to consider years not affected by scarcity, and the four years 1887-88, 1895-96, 1904-05, and 1906-07 are therefore taken. Quantities only have been included in the table, as the changes in value in the different years render them useless for the present purpose. The food-stuffs exported from India, are rice, wheat, a number of other grains, such as jauar, bajra, gram, barley, ragi, &c., which are lumped together in the Table, sugar, provisions and spices. There is, however, always a net import of the last two, as shown in the last two lines of the Table, and they have consequently been omitted from the percentage of exports. The import has been added to the production in each case, as the exports include the re-export of imports, and in calculating the percentage of exports the imports should be included to show the net absorption.

The first attempt to ascertain the yield per acre of the land

Table VII.—*Production in, imports into,*

[Quantity

Article.		1887-88.	1895-96.	1896-97.	1897-98.	1898-99.
Rice	production	580,000,000	651,095,818	587,160,748	522,873,679	679,726,776
	import	2,584	18,019	27,850	702,618	15,417
Wheat	production	142,000,000	153,976,460	118,367,520	117,992,340	158,584,440
	import	798	156,462	613,491	74,925	8,351
Other grains	production	560,000,000	616,537,715	575,233,281	538,958,253	633,560,626
	import	25,907	131,690	439,261	294,872	37,403
Sugar	production	38,000,000	46,707,680	48,018.674	46,706,566	51,135,571
	import	1,808,479	2,730,963	2,861,400	4,608,630	4,077,499
Total production and import		1,321,837,768	1,471,354.807	1,332,722,225	1,232,211,883	1,527,146,083
Exports.						
Rice		28,534,057	35,162,424	28,281,985	26,835,554	37,949,014
Wheat		13,538.169	10,665,900	2,510,417	2,897,889	20,203,158
Other grains		2,533,430	2,516,730	1,641,703	1,251,845	3,278,936
Sugar		1,195,805	1,240,596	1,348,473	690,227	498,567
Total exports		45,801,461	49,585,650	33.782,578	31,675,515	61,929.675
Percentage of export to production and import.						
Rice		4·92	5·40	4·82	5·13	5·58
Wheat		9·53	6·92	2·11	2·46	12·74
Other grains		0·45	0·41	0·29	0·23	0·52
Sugar		3·00	2·51	2·65	1·35	0·90
Percentage, total exports to total production and import		3·46	3·37	2·53	2·57	4·06
Area cropped not included under production.						
Miscellaneous food, *acres*		—	5,927,097	5,958,827	2,121,245	2,118,553
Orchards and gardens produce, *acres*					3,003,899	3,205,519
Condiments and spices, *acres*					1,017,512	1,122,089
Total acres food not included in production above		—	5,927.097	5,958,827	6,142,656	6,445,961
		Rs.	Rs.	Rs.	Rs.	Rs.
Net import, provisions, value		83,44,176	18,07,583	1,09,18,313	1,06,14,495	79,89,062
Net import, spices, value		18,79,550	12,06,131	8,82,575	25,69,500	24,97,150

and exports from India of food-stuffs.

in cwts.]

1899-1900.	1900-01.	1901-02.	1902-03.	1903-04.	1904-05.	1905-06.	1906-07.
725,569,814	639,831,112	592,904,016	559,862,027	659,026,759	627,005,498	646,504,334	592,946,360
314,932	106,694	62,270	28,142	6,961	16,032	8,195	125,055
150,428,820	117,857,120	156,057,620	133,991,520	175,371,800	212,111,780	166,804,800	188,754,880
324,395	573,422	239,258	24,508	37,430	8,475	467,712	214,599
618,651,155	532,734,982	612,421,160	650,340,404	686,588,568	697,933,404	664,367,585	646,624,678
870,248	1,274,979	265,761	207,008	95,354	61,019	146,327	185,037
48,921,047	41,653,590	51,003,351	46,379,600	44,116,972	43,676,661	50,569,184	40,182,141
3,360,862	5,276,790	6,013,333	5,462,196	6,333,843	6,936,817	8,271,129	11,104,035
1,548,441,273	1,339,308,689	1,418,966,769	1,396,295,405	1,571,577,687	1,587,749,686	1,537,139,266	1,480,136,785
32,279,553	31,356,842	34,035,490	47,501,930	45,008,661	49,491,742	43,047,559	38,723,431
10,261,981	547,367	7,851,146	11,010,227	26,721,734	44,031,997	19,649,523	16,847,376
2,108,553	1,016,758	1,858,101	4,721,278	5,447,712	8,536,346	4,491,159	3,219,677
693,965	366,330	207,676	303,000	253,344	307,414	442,201	352,893
45,344,052	33,287,297	43,952,413	63,536,435	77,431,451	102,367,499	67,630,442	59,143,377
4·45	4·89	5·74	8·48	6·83	7·89	6·66	6·53
6·80	0·46	5·02	8·22	15·23	20·76	11·75	8·92
0·34	0·19	0·30	0·73	0·79	1·22	0·68	0·49
1·33	0·78	0·36	0·58	0·50	0·60	0·75	0·69
2·93	2·49	3·09	4·55	4·92	6·45	4·39	3·99
2,291,675	2,091,826	2,050,236	2,155,423	2,245,142	2,096,823	2,069,604	—
3,375,854	3,628,088	3,381,917	3,502,695	3,608,542	3,772,815	4,100,607	—
1,004,285	1,252,501	1,295,145	1,230,959	1,273,862	1,420,048	1,332,805	—
6,671,814	6,972,415	6,727,298	6,889,077	7,127,546	7,289,686	7,503,016	—
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
93,87,215	1,27,38,763	1,20,33,640	1,00,58,959	1,21,14,976	1,31,88,628	1,50,08,499	1,56,17,515
35,55,981	32,18,572	28,37,917	18,08,802	12,79,283	29,77,884	16,19,255	82,68,031

cultivated in India was apparently made in the Madras presidency in about 1888, and in other provinces estimates were apparently commenced in 1891, and in 1892 the Revenue and Agricultural Department of the Government of India issued a blue book "Return "of the yield per acre of the principal crops cultivated in India," the information for it having been derived from all the sources available. It was on the estimates given in that book, and on the agricultural returns and administration reports of the native states, that the estimate of the production of India in 1893, given in the paper on "Silver Prices in India," published in the *Journal* for March, 1897, Appendix A, was based. More accurate estimates have been published in recent years by the Commercial and Intelligence Department, and the estimates now given are based on those figures.

The figures given as the production of each year are estimated on the acreage under crop of the previous year, because in the case of wheat the entire production, entered in the statistics in any year, is not cropped and ready for use, or for export, till the following financial year, and in the case of the other food-stuffs, a certain quantity is brought into the market in the same year as sown, but the larger share is disposed of during the following year. The area shown in the returns as under crops, from which the production is calculated, is the area reported to the provincial authorities, and recorded by them, and it may be accepted that the very minimum sown is only reported. The agriculturist is aware that land revenue is paid to Government on the land cultivated by him, and that the amount to be paid is periodically increased, and consequently he hesitates to give any information which might lead to the enhancement of the revenue, and thus to the rent paid by him. The estimate of production each year is therefore more or less underestimated. In addition, the returns of area under crops give a column "Miscellaneous Food Crops," the details of which are not known, and the production is not included in the present estimates. Similarly, orchards and gardens, which largely help in feeding the population, and are therefore important items of food, have not been included in the estimate of production. Condiments and spices are also produced in considerable quantities, but these also have been omitted from the estimate, in consequence of the difficulty in estimating the production. In addition to the amount produced a considerable quantity is also net imported. The total area in acres each year, under the three heads, miscellaneous food crops, orchards and gardens, and condiments and spices, varying between 6 and 7½ million acres, is given in the Table. In addition to these items of food, meat, fish, fowls, eggs, and milk are consumed in considerable quantities. If the weight of all food items could be added together it would very considerably reduce the percentage of production and supply exported.

Comparing the results given in Table VII for the four years representing the different levels of prices, the following information is obtained:—

Year.	Estimated level of prices.	Export in millions of cwts.	Percentage of production exported.	Production, less exports, in millions of cwts.	Estimated population in India in millions.	Food remaining in country per head of population in cwts.
1887–88	100	46	3·46	1,276	276	4·62
'95–96	118	50	3·37	1,422	290	4·90
1904–05	125	102	6·45	1,485	297	5·00
'06–07	135	59	3·99	1,421	298	4·77

These figures show that in the year with the largest export, 1904-05, which was the heaviest on record, the amount of food-stuffs left in the country for consumption per head of population was the highest in the series, and was greater than in the years with lower levels of prices. The amount per head was less in 1906-07, when the level of prices appears to have made a further rise, than in 1904-05, but the difference between 1906-07, with scarcity conditions at the end of the year, and 1895-96, a prosperous year, represents the small figure of 14 lbs. per head in the year. The table shows that the heavy export of 1904-05, as compared with the volume exported in 1887-88 and 1895-96, did not cause a demand in the country in excess of the supply, and that, therefore, the increased export was not in any way responsible for the higher level of prices. Prices fell slightly during the year (1904-05), and the evidence tends to show, in comparison with other years, that the supply, after deducting the heavy export, was still in excess of the demand, and consequently if all else had remained the same, prices should have fallen to a considerably lower level, indicating that other forces were in play and prevented it.

Table VII illustrates two important facts in this connection. Firstly, the remarkably small proportion of the production exported, which, low as it is, would be considerably lower if all food-stuffs such as fish, meat, fowls, eggs, fruit, vegetables, provisions, &c., were included. Secondly, an examination of the table forcibly presents the natural working of the economic laws of nature in the matter of supply and demand, without any external interference. When the supply is heavy, the natural laws reduce it by export; when the supply is short, the export falls off, and the opponents to the export of food-stuffs may rest satisfied that food is only exported when it can be spared, or, what is the same thing, when it is not wanted at the price. The laws of supply and demand with their attendant economic conditions work automatically, and require no interference from the Government of the country.

Indian politicians, however, argue that whatever the cause of the rise in prices, and whatever the economic laws on the subject may be, if the export of food grains was prohibited, prices would fall. This, of course, is perfectly true. Whether 1 per cent. or 30 per cent. of the food grains of a country is exported, and that export is suddenly stopped, the principle remains the same, though the degree of the effect it would have would be different. If the small percentage of the production exported was not allowed to be exported, it would act on the same principle as a few drops of water would act if put into a full bucket—the water would overflow, and similarly the export if retained in the country, instead of being exported, would cause the supply to exceed the demand at the former price, and prices would fall. How long this fall would continue would depend on circumstances, but the lower price would put out of cultivation crops on the margin of cultivation, the supply would lessen, whilst the demand would increase by the increase in population, and prices would again revert to their former level, possibly within twelve months of their fall. Thus, looking at the matter solely from the view presented, the argument is worthless as a permanent remedy. But there are other and more important aspects of the case.

From an economic point of view the proposal is absolutely unsound, because to adopt any measure that would tend to reduce exports would adversely affect the balances of trade of the country, and this, if continued, would adversely affect the gold standard, and the rate of exchange, and might cause a reversion to the silver standard, with the accompanying additional heavy Home charges, caused by a fall in exchange. In addition to this, if the food supply from India ceased, unless the gaps could at once be filled from elsewhere, food prices outside India would rise, and this, owing to the existence of unions and their methods of enforcing their wishes by means of strikes, and in opposition to the economic laws on the subject, might affect wages outside India, and thus indirectly all prices. This would raise the price of imports into India, and either the imports would have to be reduced, or exchange would further fall, involving still heavier charges for sterling payments.

In certain circumstances, for example in the case of the great famine in Russia in 1891, it may conceivably be advisable to prohibit the export of food-stuffs, but even in Russia's case which was for the one year only, the action was not economically sound, though politically it was considered to be so. But for any nation to permanently prohibit the export of food-stuffs or of any other important export would be a suicidal policy. The projected cessation of the cultivation of opium in India is serious enough from a revenue point of view, but it would be much more serious if the full export was summarily stopped. If the amount exported is lessened annually in comparatively small quantities, its place can and will be taken by other exports, but the export of opium amounts to Rs. $9\frac{1}{3}$ crores only, and the export of food-stuffs to Rs. 33 crores, and it is doubtful if the place of the latter could be taken up by other exports, but even if it could, it would have to be done very gradually, and in such a case prices would not be affected even temporarily, and in the end the remedy would prove worse than the disease.

The table shows that the amount of grain and sugar retained in the country in the four years 1887-88, 1895-96, 1904-05, and 1906-07 was 518, 548, 560, and 534 lbs. per head of population in each of the years respectively, giving only 1·53 lbs. a head per diem, even in the most favourable year 1904-05. This allowance for people whose principal article of consumption is grain appears low, and would seem to indicate that the figures of production are under-estimated. This, as already suggested, is possible, but the under-estimate cannot be very great, because one third of the population of India consists of children under fifteen years of age, and enquiry has elicited the information that a non-meat eating family of eight people, in well-to-do circumstances, living in a town, ordinarily consumes about three maunds of grain a month, equal to one pound a day per head. In addition to this they eat fruit, vegetables, fish, and milk. It has also been ascertained that a meat-eating family consumes about three-quarters of a pound of grain per head per day, in addition to meat, fowls, eggs, fish, vegetables, fruit and milk. It is stated, however, that the agriculturist, living in the country, consumes more grain and less fruit and vegetables, and that their daily consumption, when supplies are plentiful and crops good, is over one and a half pounds of grain a day. There is however a large number of meat-eaters in India, chiefly in the Bombay, Madras and Burma provinces, whose consumption of grain is lower than the non-meat eating class, and consequently one and a half pounds of grain per head of population throughout India probably represents a supply in excess of the demand.

It may be mentioned that the native of India does not eat the grain in its raw condition, which when cooked the weight becomes materially increased. For example, one of the principal articles of food is the Chuppattie, a sort of cake made out of grain, and 1 lb. of grain makes over 2 lbs. of Chuppatties. Similarly 1 lb. of raw dhall when cooked becomes nearly 3 lbs.

TABLE VIII.—*The price and export of wheat.*

1 Year.	2 Estimated production of previous year, ripe for use and export this year, plus import of year.	3 Amount exported from India.	4 Percentage of production exported.	5 Wholesale price of wheat in Calcutta per ton.	6 Steamer freight, Calcutta to London, per ton.	7 Cost, plus steamer freight, per ton.	8 Index number, 1893-94 = 100. Price of Indian wheat in London.	9 British "Gazette" average prices. Index number, 1893-94 = 100.
	cwts.	cwts.		Rs.	Rs.	Rs.		
1893-94 …………	168,345,166	12,767,980	7·59	83	14	97	100	100
'94–95 …………	160,161,226	7,478,393	4·67	72	25	97	100	85
'95–96 …………	154,132,922	10,665,900	6·92	80	13	93	96	87
'96–97 …………	118,981,011	2,510,417	2·11	107	9	116	120	100
'97–98 …………	118,067,265	2,897,889	2·46	115	11	126	130	115
'98–99 …………	158,592,791	20,203,158	12·74	89	15	104	107	129
'99–1900 ………	150,753,215	10,261,981	6·80	84	17	101	104	98
1900–01 …………	118,430,542	547,367	0·46	101	17	118	122	102
'01–02 …………	156,296,878	7,851,146	5·02	99	15	114	117	102
'02–03 …………	134,016,028	11,010,227	8·22	85	15	100	103	108
'03–04 …………	175,409,230	26,721,734	15·23	82	11	93	96	102
'04–05 …………	212,120,255	44,031,997	20·76	79	13	92	95	108
'05–06 …………	167,272,512	19,649,523	11·75	92	15	107	110	115
'06–07 …………	188,969,479	16,847,376	8·92	101	11	112	115	108
'07–08 …………	186,156,907	18,353,563	9·86	111	11	122	126	117
'08–09 …………	122,795,968	2,797,232	2·28	139	11	150	155	123

14. *The export of wheat as a dominant factor in raising all prices.*

The export of wheat, apart from other food-stuffs, has been regarded by some as causing a rise in prices for reasons other than those discussed in the last section of this paper, and the argument is now, therefore, separately discussed. It has been argued that the heavy exports of wheat have caused its price to remain high in India, and that this has been a dominant factor in the maintenance of a high level of all prices. This argument is apparently based on the theory that the price of one important item of food supply, by raising a demand for other items, raises the price of all food, which in turn reacts on all prices.

The production of wheat in the record year 1904-05 was 13·4 per cent. of the production of all food-stuffs entered in Table VII, but it was only 10·8 per cent. in the ten years 1897-98 to 1906-07. This shows that the grain, even as a production, is of comparatively minor importance. But of this production 10·1 per cent. was exported, and this indicates that the proportion of wheat eaters in India, as compared with feeders on other grains, is very small, and that even assuming an excessive demand for export purposes, and a supply less than the demand for home consumption, the supplies of other grains are comparatively so enormous that there would be little difficulty in filling the gap. In former days, a wheat eater, like a rice eater, would rather starve than eat any other grain, but that day has long since passed.

Between 1876 and 1879 English millers complained that Indian wheat did not suit their mills, and though the price was then lower than anywhere else in the world, they declined to take it when other wheat was available. In certain years it was required to make up deficiencies, and as far back as 1877, 6¼ million cwt. was exported, and in 1881, when the American crop failed, and the grain was "cornered," nearly 20 millions of cwts. was exported, and a review of the whole period since then shows that the export from India has always been dependent on the visible supply of the rest of the world, that India's production is inferior to that of other countries, and commands a lower price, that the heaviest exports were not in the most profitable years, and that Indian wheat is only accepted when other supplies fail.

Table VIII explains the position of the export of wheat since 1893-94. Columns 8 and 9 give the index numbers of the price of Indian wheat landed in London, and the London price of wheat. The higher index numbers in column 9 indicate shortage of supplies in gold standard countries, but this shortage was reduced and prices lowered when India was in a position to fill the gaps elsewhere; for example, in 1904 the world's shortage was heavy, but prices did not rise high because India had a splendid crop, and was able to give a large supply, 44 million cwt., the highest export on record, at the lowest price, during the sixteen years, except 1892, and this filled the world's gap. Columns 3, 8 and 9 show that the exports were highest in the years in which the Indian price was lowest, except in 1894 when steamer freights were high. In 1895-96, 1906-07, and 1907-08 the exports were considerable, although, as compared with 1893-94 the price of Indian wheat landed in England was higher than that of British wheat. The explanation appears to be that wheat intended for export is ordinarily purchased in large quantities, at a comparatively low rate, early in the season, and if the balance remaining unsold is insufficient at low prices for the home consumption, a higher price may be demanded, which may materially raise the average price of the year. In 1895-96 the crop was good and followed two very good years in which the European and American supplies were heavy, and India's wheat was not required, with the result that stocks accumulated, and the price of wheat in India fell very low (Rs. 72 per ton). It was therefore probably at that rate that exporters purchased the grain in 1905-06, which enabled the export to be carried out. The years 1906-07 and 1907-08 (production of 1905-06 and 1906-07) both had heavy crops, and if the export crop of 1906-07 was purchased early in the season at the 1905-06 rate, and that of 1907-08 at the 1906-07 rate, it enabled both crops to be exported at a profit.

In a year of scarcity prices rise all round, and the export of wheat, if exported in any quantity, causes its price to still further rise. This results in other grains being consumed instead of wheat, raises the demand for them, and therefore their price, but since the total export of wheat in a scarcity year, as shown in the table, is so small as compared with the total food production of India, the increase in the demand caused must be inappreciable as compared with the supply, and any rise of price that may have occurred by this cause must necessarily ordinarily be nominal only, and of a temporary character.

An examination of Table VIII, columns 2, 3, 4, shows that India exported wheat only when her crop was sufficient to permit it, that each year of heavy export left a stock in the country sufficient for normal requirements at normal prices, that down to 1905-06 prices in India were independent of the amount exported, rising or falling in accordance with the general conditions of the country, and that in the years of heaviest exports, 1895-96, 1898-99, 1902-03, 1903-04, 1904-05, and 1905-06 Indian prices were low, and were not apparently affected by the export. In 1906-07 and 1907-08 prices rose, but the export in neither year was excessive, and the crop in both years was ample to permit the export, and the rise in price was therefore clearly due to causes other than connected with the export.

If the export of wheat was suddenly stopped, its price would fall, and this would result in a lowering of the margin of cultivation, and less wheat would be grown, prices would rise again, and the conditions sooner or later would revert to the same position as would otherwise obtain. The export of wheat alone has had no influence on prices generally.

15. *A rise in wages, by causing an increase in the cost of production, raising the level of prices.*

The three agents of production are land, labour, and capital, and if any of these increase in value, the value of the production itself will ordinarily increase. In other words, if there is a rise in the wages of labour, prices will ordinarily rise.

The population in India may be divided as follows :—

Agricultural	196,000,000	= 66 per cent.
Industrial	46,000,000	= 15 ,,
Labour	18,000,000	= 6 ,,
Professions	11,000,000	= 4 ,,
Domestic	11,000,000	= 4 ,,
Commerce	8,000,000	= 3 ,,
Others	6,000,000	= 2 ,,
	296,000,000	

In preparing index numbers therefore, 20 numbers have been taken for agriculture, 6 for industrial, 3 for labourers, and 1 for each of the others, and the result is given in Table IX, treating the year 1883 as 100 in every case. The table shows that there has been a steady rise in wages since 1883, and taking the first and last year in each estimated level of prices, the wages stand as follows :—

Year.	Index numbers. Wages.		Level of prices.
	First year of new level of prices.	Last year of new level of prices.	
1887	—	106	100
'89	108	—	118
'99	—	112	118
1900	113	—	125
'04	—	123	125
'05	122	—	135
'07	—	128	135

TABLE IX.—*Index numbers*

	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.
Agricultural labourers—									
Burma	100	90	93	97	96	89	102	89	88
E. B. and Assam	100	100	104	104	104	101	106	108	107
E. B. and Assam	100	100	104	104	104	101	106	108	107
Bengal	100	88	115	115	102	104	106	110	102
Bengal	100	88	115	115	102	104	106	110	102
U. P. Agra	100	103	108	108	116	116	116	116	116
U. P. Oudh	100	104	111	114	114	125	125	125	125
Rajputana	100	95	95	83	83	87	87	81	87
C. India	100	107	120	114	109	136	136	136	109
Punjab	100	97	98	110	108	105	102	102	100
Sind	100	102	90	90	114	119	114	124	133
Bombay	100	111	104	103	103	103	101	103	101
Bombay	100	111	104	103	103	103	101	103	101
C. Provinces	100	100	93	93	89	93	89	89	98
Berar	100	100	93	100	80	80	107	93	100
Hyderabad	100	100	100	100	100	100	100	100	100
Madras	100	110	107	100	112	114	114	90	95
Madras	100	110	107	100	112	114	114	90	95
Mysore	100	100	100	100	100	100	100	107	109
Coorg	100	100	100	100	100	100	100	100	112
Industrial—									
E. I. R., blacksmith	100	120	100	100	100	100	100	120	120
Paper mill, Bengal, carpenter	100	114	129	114	114	114	114	114	114
Orissa canal, mason	100	100	100	100	100	116	120	82	82
Cawnpore factory, tanner	100	100	100	100	100	100	100	133	133
Railway workshop, Lahore, fitter	100	96	100	100	107	107	116	114	118
Cotton mill, Bombay	100	120	120	120	120	120	120	133	125
Labourers—									
Postal runners, Madras	100	100	100	100	100	100	100	97	97
Brewery coolies	100	83	82	81	81	79	78	78	84
Orissa, canal labourers	100	100	100	100	100	108	84	108	108
Profession.—Mill engine-man	100	100	133	150	167	167	183	183	183
Domestic.—Syce, Cawnpore	100	122	111	100	100	100	100	100	100
Commerce.—E. I. R., Delhi, unskilled	100	102	111	106	111	102	121	130	128
Others.—Lascars, Calcutta	100	100	100	100	100	100	100	100	100
Total	3,300	3,373	3,447	3,424	3,451	3,507	3,568	3,576	3,579
Average	100	102	104	104	105	106	108	108	108

Thus the first rise in the level of prices from 100 to 118 was accompanied by a rise of 2 per cent. in wages. During the time the level continued at 118, wages further rose 4 points, and 1 point in the following year when the level sprung from 118 to 125. Whilst that level continued wages rose 10 points, and in the following year the level of prices rose to 135, wages further rising 5 points in the two following years.

In considering the relation of wages to prices, it must be *wages in India.*

1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
88	85	84	83	83	89	89	90	90	85	86	88	90	94	90	88
106	107	113	111	125	114	123	118	114	118	124	123	134	142	132	144
106	107	113	111	125	114	123	118	114	118	124	123	134	142	132	144
96	100	104	104	106	106	108	106	113	108	115	125	127	119	127	135
96	100	104	104	106	106	108	106	113	108	115	125	127	119	127	135
113	121	126	126	108	111	108	111	111	111	111	126	126	126	118	95
125	136	136	136	125	125	143	143	125	129	136	136	136	121	121	104
100	100	112	105	98	100	100	100	114	114	114	114	114	114	110	95
127	120	116	116	127	116	120	132	141	145	150	152	150	150	150	170
108	105	108	106	111	110	108	108	116	116	119	110	116	110	125	170
110	105	138	100	129	121	129	129	119	103	100	95	100	95	105	119
100	105	108	109	100	108	107	89	91	95	103	111	105	103	116	123
100	105	108	109	100	108	107	89	91	95	103	111	105	103	116	123
107	107	102	86	95	95	95	84	95	95	107	102	118	118	130	130
93	103	100	100	75	100	100	100	100	100	100	100	107	107	107	133
100	100	87	100	158	158	158	158	128	118	128	113	175	145	145	158
100	100	100	100	100	100	98	98	100	102	102	102	100	102	105	105
100	100	100	100	100	100	98	98	100	102	102	102	100	102	105	105
109	90	107	113	113	107	127	121	118	115	115	119	119	119	119	142
112	112	112	112	116	112	112	112	116	116	109	109	89	89	89	107
100	140	110	120	100	100	110	120	120	120	120	120	120	120	120	120
114	114	114	107	107	114	107	107	107	107	114	114	150	150	129	129
82	82	82	82	82	82	106	110	114	104	108	114	110	110	114	114
133	133	133	133	133	133	133	133	133	133	133	133	133	133	133	133
115	117	124	120	98	92	98	102	102	92	100	102	98	105	104	109
133	137	137	137	137	137	137	137	137	137	137	137	137	137	137	142
97	97	97	98	98	101	101	101	101	101	104	107	107	105	106	106
84	84	84	84	84	84	84	84	84	84	84	88	88	84	84	91
108	108	108	108	108	108	108	108	108	88	96	108	112	112	104	112
203	203	168	172	178	223	183	173	180	180	243	243	298	298	325	325
122	122	122	122	122	122	113	113	113	116	116	116	116	116	102	78
108	108	106	106	106	108	108	104	111	113	126	115	117	128	128	132
100	100	100	85	88	100	100	100	100	100	100	100	100	100	100	100
3,595	3,653	3,663	3,608	3,641	3,704	3,749	3,702	3,719	3,668	3,844	3,883	4,058	4,018	4,055	4,216
109	111	111	109	110	112	114	112	113	111	116	118	123	122	123	128

remembered that "wages" is only one of the factors in the cost of production, and forms only a portion of that cost, and often only a small portion. Thus a rise in wages does not mean an exactly corresponding rise in price, but on the contrary, under certain conditions a considerable rise in wages may sometimes not increase the price, and in any circumstances a rise in wages, all else remaining the same, ordinarily entails a rise in price of a very much lower percentage than the rise in wages. It is not possible to lay down any fixed proportions because circumstances differ in different cases, for example one crop may require irrigation, and another none, another may require considerable weeding, another both, in short the price in such a case is dependent on the quantity of the labour required. The quality of the labour has also to be considered. A raiyat cultivating his own land will give better work than a hired labourer, and hired labourers are of different quality in their working capacity in different provinces, and even in the same province. Briefly it may be laid down as a general principle that a rise of 10 per cent. in wages should not increase the price by more than 3 per cent., and in some cases considerably less.

We find, however, that the rise in the level of prices has been higher than the rise in the wages, *cent. per cent.*, and it is clear, therefore, that, though the rise in the level of prices may, to a very small extent, have been due to the rise of wages in India, it is very far from being fully accounted for by it.

It has been suggested, on the other hand, that the rise in wages has been caused by the rise in the level of prices. Wages in India, down to the limit of a living wage, are entirely independent of prices, and are dependent solely on the supply and demand. If a farmer requires 500 hands, and has a choice of 1,000 men to obtain them, he would not offer higher wages to the 500 taken because the price of food was higher than in the previous year. He would offer the minimum living wage, which might be the same as the wage he actually paid in the previous year. If the minimum living wage only had been given in the previous year, he would increase it to the minimum wage of the new year, and this probably is what has happened in some parts of India during the past twenty years, and to that extent the rise in wages has been due to higher prices. But the minimum living wage is apparently not common, and does not apply to India generally.

The rise in wages, therefore, indicates that the supply has not been equal to the demand at the former wage. This is due to various causes. Cultivation has increased enormously, requiring additional labour. Irrigation works and railways have also made heavy demands on the labour markets, and the industrial development and mining have further added to the demand. All these conditions combined required a large increase in the population, but the population which the Census reported to have increased by 13·18 per cent. between 1881 and 1891 increased only by 2·41 per cent. between 1891 and 1901, and since 1901 plague and fever have accounted for many, and it seems doubtful if the increase in the population in the present decade is even as great as it was in the last one.

TABLE X.—*Balance of trade.*

[In lakhs of rupees.]

	1893-94.	1894-95.	1895-96.	1896-97.	1897-98.	1898-99.	1899-1900.	1900-01.	1901-02.	1902-03.	1903-04.	1904-05.	1905-06.	1906-07.	1907-08.	1908-09.
Imports.																
1. Merchandise (excluding Government)......	72,96	70,17	69,32	71,91	69,42	68,38	70,71	76,28	81,52	78,79	84,82	96,68	103,08	108,31	129,90	1,21,26
2. Gold (excluding Government)	3,15	1,76	5,03	4,49	7,28	8,84	11,45	11,87	8,30	13,15	20,13	21,81	14,74	18,47	20,73	8,40
3. Silver (excluding Government)	15,28	7,80	8,33	8,58	13,20	9,04	9,51	4,59	11,35	12,11	11,81	11,22	6,18	8,73	12,09	14,23
4. Council Bills paid in India	16,42	28,88	33,08	25,23	14,79	28,38	27,93	19,25	27,83	28,08	35,71	36,12	47,70	50,47	22,78	20,07
5. Rupee paper enfaced for payment from England to India ...	4,98	4,41	2,90	4,76	4,56	2,96	4,51	2,98	3,16	2,83	2,22	1,48	1,40	1,46	1,89	1,53
6. Interest on rupee paper enfaced for payment in England (approximate)	85	83	89	84	75	75	73	78	71	65	60	59	58	58	53	50
	1,13,64	1,13,85	1,19,55	1,15,81	1,10,000	1,18,35	1,24,84	1,15,75	1,32,87	1,3561	1,55,29	1,67,90	1,73,68	1,88,02	1,87,92	1,65,99
7. Balance in favour of India	1,17	8,22	4,76	—	—	5,99	—	5,13	3,24	5,25	8,99	65	—	—	—	—
Exports.																
8. Merchandise	1,06,50	1,08,91	1,14,33	1,03,98	97,63	112,80	109,08	107,72	124,90	129,40	153,52	157,72	168,84	176,68	1,77,37	153,02
9. Gold (excluding Government)..............	2,51	6,73	2,50	2,20	2,37	2,33	2,01	4,31	3,37	3,68	3,80	3,70	5,29	3,68	3,38	3,69
10. Silver	1,60	1,50	1,76	2,74	4,78	5,07	5,95	3,17	5,10	5,23	4,73	4,43	1,18	2,04	2,06	2,27
11. Rupees enfaced for payment in England	3,20	3,88	4,62	3,46	2,01	2,89	3,91	4,33	1,34	1,10	73	1,15	1,05	1,55	61	72
12. Remittances, etc., from India in excess of to India	1,00	1,05	1,10	1,15	1,20	1,25	1,30	1,35	1,40	1,45	1,50	1,55	1,60	1,65	1,70	1,75
	1,14,81	1,20,07	1,24,031	1,13,53	1,07,99	1,24,34	1,22,25	1,20.88	1,36,11	1,40,86	1,64,28	1,68,55	1,70,96	1,85,60	7,85,12	1,61,45
Balance against India.........	—	—	—	2,28	2,01	—	2,59	—	—	—	—	—	2,72	2,42	2,80	4,54
Gold exported by Government	0	0	0	0	0	0	0	675	300	75	641	841	9,00	0	0	36
Silver import by Government	4	2	1	1	5	1	1	809	94	8	657	648	10,72	17,32	945	11
Average exchange of rupee in pence	14·556	13·100	13·401	14·433	15·366	15·972	16·069	15·981	15·982	16·002	16·047	16·045	16·042	16·087	16·029	15·931

16. *An excess of imports adversely affecting the "Balance of Trade."*

Table X gives the "balance of trade" in India each year from 1893-94 to 1908-09, so far as it is possible to work out such a balance. The table is not intended to be an "Equation of Indebtedness" because such an equation is unsuitable in the case of India, where part of the account is kept in England, and part in India, and money may be borrowed in England without affecting the annual trade balance sheet of India. The statement is intended to show the actual transactions affecting India's trade only, each year, *i.e.*, a balance of account between England and India, the exports to and imports from foreign countries being adjusted through England.

All the heads in the table except No. 12 are known, and published in the official statistics, but it is necessary to point out that an over or an under estimate of 2 or 3 per cent. in the declared values either of exports or of imports might make a difference of several crores one way or the other. The declarations of importers and exporters entered in the bills of entry for imports, and shipping bills for exports, which are checked by the Customs officials, record the wholesale cash price, less trade discount, for which goods of the like kind and quality are being sold at the time and place of importation and exportation respectively. Consequently the declared import prices include all shipping and steamer freight charges to the port of import, which have to be recovered in India, and paid for in England. The declared export charges exclude shipping and steamer freight charges. Shipping charges are paid in India, but are insignificant, and may be ignored, and steamer freight charges are either paid in India and remitted to England ordinarily by transfer, or are paid in England, and in neither case is the value returned to India, as the head offices of the shipping companies are located in England, and the item does not therefore enter into the account.

Item No. 12 is an uncertain factor, and impossible to estimate with accuracy. Securities, other than Government securities, are sometimes remitted to India occasionally on account of the sale of Indian securities in England, *e.g.*, jute or cotton mill shares, and sometimes as a temporary measure as a set off to square the balance of trade. But these imports combined cannot represent a large figure in any year. Capital, both permanent and loanable, money allowances to young officers and others, interest on securities held out of India, &c., are sent to India through Council bills, or gold or silver imports. On the export side appear the transfer of savings in India to England, including securities other than Government securities, family remittances, all interest on capital invested in India by individuals living outside India, profits on loanable capital, and sometimes the return of the capital itself, and various other similar items transferred from India to England. The export must therefore necessarily be largely in excess of the corresponding import, and for the purposes of this statement a net export of 1 crore of rupees in 1893-94, increased by 5 lakhs of rupees a year has been roughly estimated. It may also be noted that a balance of trade need not be squared within any precise twelve months, and in fact in the present days of credit, the balance may remain outstanding for considerable periods, but taking a series of years, the balance outstanding at the end of the time should not be considerable. This however is to some extent vitiated by the fact that goods were formerly not infrequently exported as remittances, and their value remaining in England did not appear as an import. This, it is understood, was done to some extent in 1893-94, and the two following years, as a means of remitting money on a falling exchange, and thus escaping loss as far as possible. Remittances, especially in the shape of loanable capital returned, and trading profits, are probably still exported by the medium of goods.

It will be noticed that the Government export of gold has been omitted from the export side of the account. This is because the whole of the gold was exported for the gold standard and paper currency reserves, and does not enter into the balance of trade.

The table shows that for the whole period 1893-94 to 1908-09 (sixteen years) there was a net balance in favour of India amounting to Rs. 24 crores, and of this Rs. 14 crores was during the first three years, when exchange fell heavily in 1894-95, and rose slightly in the following year. It is probable that during these years goods were exported as remittances in the manner already suggested, and that the balance in favour of India was in reality less than the figures show. It is also possible that the favourable balances partly covered the adverse balances of previous years during which exchange had been rapidly falling. It is clear however that there must have been a tangible balance in favour of India during 1894-95 and 1895-96 to cause exchange to rise in the succeeding years. The net balance in favour of India from 1893-94 to 1904-05 (twelve years) amounted to Rs. 36½ crores. This indicates that the balance was favourable throughout, and this is proved by the gradual rise in exchange after 1894, reaching its maximum point in 1900, and remaining steady at that point for the remainder of the period, but it is quite possible that the actual figures may not have been as high as shown, as the exports may have been over-estimated or the imports under-estimated, and as duty is leviable on nearly all imports, it is conceivable that their declared values may have been under-estimated. Since 1905-06 (four years) the balance has been against India. It is possible that this may have been squared by the previous favourable balances, but the tendency of exchange to fall in 1907-08, and 1908-09, indicates adverse conditions. An adverse balance of trade, besides threatening exchange, encourages exports, and raises a demand for them, and this prevents a fall in their price, even if it does not raise prices.

The prominent points immediately apparent in the table are the heavy imports of gold and silver since 1902-03 (seven years) and the heavy import of Council bills from 1903-04 to 1906-07.

The net import of gold in India since 1902-03 (seven years) was Rs. 65¼ crores. To this, in order to ascertain the amount of gold absorbed by the country, must be added the production within the country, amounting to Rs. 25 crores, and a further addition must be made of Rs. 10½ crores, representing the amount of gold placed at the disposal of the public by Government by the net transfers from the Gold Standard Reserve, the Paper Currency Department, and Treasury balances, of gold deposited in those departments before 1902-03, making a total of Rs. 101 crores in all, equal to an average of Rs. 14·43 crores a year. Of this total, about Rs. 41½ crores were in sovereigns, and Rs. 59½ crores in bullion. Of the sovereigns, the bulk went nominally into circulation, shown as Rs. 39½ crores in Table VI, and the balance, with the net import of bullion, Rs. 61½ crores in all, was apparently used for the arts, ornaments, and hoarding, representing an average of nearly Rs. 9 crores a year. Even this is a remarkable figure for absorption in the manner stated, but it has been suggested that the actual gold circulation at the end of 1908-09 did not exceed a few crores of rupees in value, and the present position indicates that there is now practically no gold in circulation, and if this is the case, the bulk of the Rs. 39½ crores shown in Table VI as in circulation was also disposed of by the public, making a grand total of nearly Rs. 100 crores so disposed of in seven years, the bulk of it during the past three or four years. Rs. 100 crores is 66,500,000*l.* sterling, and represents an average annual disposal of 9,500,000*l.* sterling, equal to Rs. 14¼ crores.

It is not possible to suggest how this enormous sum could have been disposed of, unless a large share of it was temporarily stored in the hope that the gold standard might collapse, or even that exchange might fall heavily, and thus make gold more valuable in its relation to silver, but if this is the case it is not intelligible why the money still remains hidden now that it is sufficiently clear that the menace of the gold standard has for the time disappeared, that exchange is more steady, and that Council bills are in heavy demand. It is possible that a large portion may have taken the place of rupees in hoards, and in such a case the currency became even more inflated than estimated in Tables IV and V. It may be noted that in the six years 1891 to 1896, the total net import of gold into India amounted to Rs. 8¼ crores only, an average of Rs. 139 lakhs a year, and it is possible, though not probable, that the short supplies during this period were brought up to an average in the succeeding years to date.

This uncertainty of the position is apparently one of the evils of a gold currency in a country which looks upon silver as the traditional, and normal form of circulation, where the gambling spirit, especially in the precious metals, is rife, and where opportunity is made available to exercise it by the frequent variations in the relative values of gold and silver. Gold can now be imported by the public, and if it is not required, it can be exchanged for rupees at the treasuries. Its import, when not in demand for the arts and ornaments—and bullion is presumably mainly imported for those purposes—is practically an addition to Council bills on which there is no check, and the import of gold may at any time reverse the balance of trade, as it has assisted in doing during recent years.

The net import of silver by Government and the public from 1903-04 to 1908-09 (six years) amounted to Rs. 98 crores, and as the net export of coined rupees was about Rs. 4 crores during the period, the net import of silver bullion was Rs. 102 crores. Of this, bullion to the value of Rs. 54½ crores was taken to the Mint, of which Government provided Rs. 50½ crores, and the public Rs. 4 crores. A portion of the balance was utilized in the manufacture of ornaments, and by replacing rupees in hoards, and the remainder, possibly a considerable amount, was presumably held in stock for future sale, as there was apparently not a sufficient market for the whole at the time of import. The total amount of silver bullion purchased by Government from the public between 1900-01 and 1908-09 was Rs. 12⅕ crores.

The import of silver bullion by private persons is not on the same footing as the import of merchandize, because, beyond the amount required for ornaments, there is ordinarily no market for it, though in consequence of its fall in price in the London market, a limited market in India was found for its sale to take the place of rupees in hoards. Silver used for this purpose swells the currency beyond what is required for the ordinary necessities of trade. In addition to this, all silver imported has to be paid for by exports, and a heavy import is liable to produce an adverse balance of trade, raising a demand for exports, and thus assisting in maintaining a higher level of prices. Silver bullion in Bombay, excluding import duty, stood at 11½ annas a tolah in 1900, and fell to 9½ annas in 1902-03, it rose again to 10½ annas, 11 annas, 11½ annas and 12½ annas in the succeeding years to 1906-07, but fell to 11·81 annas in 1907-08 and 9·79 annas in 1908-09. These great fluctuations resulted in considerable speculation; at first when the price was low, the purchases were for a rise; as it rose, speculation was for a further rise. In 1905-06, and 1906-07, when the price was comparatively high again, purchases were small, but in the two following years with falling prices, speculation became rife again. This speculation has perhaps been unwittingly encouraged by Government purchasing silver in the Indian market for the coinage of rupees, purchasing no less than Rs. 6¾ crores in value in 1902-03, when silver bullion was at its lowest point. This probably led to speculators importing silver beyond legitimate needs, in the assurance, or hope, that if they were unable to dispose of the metal otherwise, the Government would take it at the market rate. Such a system if carried far enough might eventually resolve itself into a modified form of open Mints again. The trade in silver in India can scarcely be described as a legitimate one, and as circumstances have proved, it is the reverse to a benefit to other trade, and for this reason alone, even if the important question of the gold standard had not to be considered, it would be politic on the part of the Government to put a stop to it. This would effectually be carried out by putting a high import duty on the metal to vary as the gold price of silver bullion varies in the English market.

As regards Council bills, in 1871-72 the amount paid in India was under Rs. 10 crores, but sprang to Rs. 15 crores in the following year. It rose to Rs. 22 crores in 1881-82, and was the same figure in 1889-90, with variations in the interval. In 1892-93 it reached Rs. 27 crores, but fell to Rs. 16 crores in the following year, owing to the closing of the mints in India, when the banks refused to purchase bills on India, apparently with the intention of reducing exchange, and jeopardizing the new currency policy. The balance of trade was however equalized, mainly by the heavy import of silver bullion, and a heavier import of merchandise, whilst Home charges were defrayed by temporary loans. In 1894-95 and 1895-96, Council bills increased to Rs. 29 and Rs. 33 crores respectively. They were short in 1897-98 and 1900-01, both famine years, but rose to Rs. 28 crores again in 1901-02, to Rs. 36 crores in 1903-04, and in 1904-05, to Rs. 48 crores in 1905-06, and to Rs. 50½ crores in 1906-07. During the past two years they fell to Rs. 23 and Rs. 20 crores. The amount of Council bills offered for sale in England each year is dependent on the requirements of the Secretary of State to meet Home charges, and the amount of bills purchased by the public depends mainly on their requirements of rupees in India to meet charges in connection with the payment of exports, and for the remittance of capital, permanent and loanable.

TABLE XI.—*Home charges.*

[£000's omitted.]

1 Year.	2 Disbursements, excluding purchase of silver and gold standard, and paper currency reserves.	3 Silver purchases.	4 Gold standard and paper currency reserves.	5 Total disbursements.	6 Net borrowed in England.	7 Various receipts.	8 Total receipts.	9 Net requirements.	10 Net charges now paid. Decrease cash bal. = −, increase cash bal. = +.	11 Net charges now paid. Net bills in India.	12 Equivalent to rupee at £1 = Rs. 15.
	£	£	£	£	£	£	£	£	£	£	Rs. lakhs.
1902–03....	19,720,	285,	356,	20,361,	− 368,	1,305,	937,	19,424,	− 925,	18,499,	27,75
'03–04....	20,770,	4,055,	2,566,	27,391,	− 600,	5,659,	5,059,	22,332,	+ 1,527,	23,859,	35,79
'04–05 ...	21,626,	4,510,	2,000,	28,166,	− 2,	6,710,	6,708,	21,458,	+ 2,968,	24,426,	36,64
'05–06....	33,595,	8,218,	8,867,	50,680,	13,730,	3,955,	17,685,	32,995,	− 1,826,	31,169,	46,75
'06–07....	26,542,	12,371,	3,385,	42,298,	1,250,	5,311,	6,561,	35,737,	− 2,830,	32,907,	49,36

Table XI shows the requirements of the Secretary of State to meet Home charges each year from 1902-03 to 1906-07.

The expenditure against revenue was the same in 1902-03 and 1903-04, and the increase in column 2 of 1,000,000*l.* was a debt head increase. The year 1903-04 shows an increase of nearly 4,000,000*l.* for the purchase of silver, and over 2,000,000*l.* for the gold standard reserve, but the latter was more than met by a remittance of gold from India. In 1904-05, expenditure against revenue rose by 1,000,000*l.*, and purchase of silver increased by 500,000*l.* In 1905-06 there was a special capital charge on account of redemption of Railway liabilities amounting to 13,000,000*l.*, which, however, was covered by a loan. Omitting this, there was a decrease of 1,000,000*l.* in column 2. The year shows an increase of nearly 4,000,000*l.* in the purchase of silver, and a heavy deposit in the gold standard and paper currency reserves. The former had to be met out of Council bills, and the latter also in part, as the amount of gold deposited exceeded the remittance in gold from India. The year 1906-07 shows an increase of payments in column 2 amounting to 6,000,000*l.* as compared with the former year, after excluding the special liability of 13,000,000*l.* This increase was due to certain debt transactions, and 2,000,000*l.* was borrowed to meet it in part, though 750,000*l.* of other debt was paid off. Silver again showed a heavy increase, and a deposit in the gold standard reserve was in excess of the receipts of gold.

On a review of the whole period, it appears that there was an increase of 1,000,000*l.* only in ordinary expenditure, that the demands for Council bills increased in consequence of increased liabilities under capital and debt heads, which presumably could not have been avoided, but that the main cause of the increase in the demand was the great increase in the purchase of silver for India for coinage purposes, and to a limited extent also to the purchase of gold for the Gold Standard and Paper Currency Reserves, in excess of the amount remitted from India. The amount of bills paid in India during the four years 1903-04 to 1906-07 was Rs. 170 crores (see Table X, 4) against Rs. 130 crores in the previous four years—a difference of Rs. 40 crores. Of this Rs. 36 crores was on account of the purchase of silver in excess of the Government purchase during the previous four years, and Rs. 4 crores was on account of the purchase of gold for the reserves. The question therefore arises whether these heavy purchases of silver bullion, in addition to the amounted imported by the public, practically the same amount in both periods of four years (Rs. 38 crores), were really required for the purposes of the currency, and it is necessary, therefore, to examine the second condition, the public requirements of rupees in

India. In order to enable trade to be carried on successfully and progressively, its requirements must be met by an ample currency, and since it is to the benefit of Government to give every encouragement to legitimate trade, inasmuch as it increases the revenues of the country, and as the circulation is not increased automatically, but is regulated by Government, it is clearly the duty of Government to meet the public demand for currency, after making the necessary enquiries as to whether the demand is legitimate or not. Council bills are required by the public to meet the cost of exports from India not covered by the imports. The exports and imports for the two periods were as follows:—

Exports.

	1899-1900 to 1902-03.	1903-04 to 1906-07.
	Rs. crores.	Rs. crores.
Merchandize	471	649¾
Gold	13½	16½
Silver	19½	12½
	504	678¾
Difference	174¾	

Imports.

	1899-1900 to 1902-03.	1903-04 to 1906-07.
	Rs. crores.	Rs. crores.
Merchandize	307¼	392¾
Gold	44¾	75¼
Silver	37½	38
	389½	506
Difference	116½	

Thus, at the prices ruling, an import of Rs. 58¼ crores was required to square the public account, in excess of that required in the previous four years, and the rupee coinage to cover this increased demand was Rs. 37½ crores in excess of the coinage of the previous period. Thus, assuming that all else remained the same, and that no other conditions had to be considered, the great increase in trade during the latter period necessitated a great increase in the circulation to meet the demands to carry it on. If for example, to take an extreme case, Government had not purchased any silver bullion to remit to India for coinage, the imports of Council bills would have been reduced by Rs. 41 crores, and either exports would have had to have been reduced, or imports increased. This would have interfered with the free flow of trade, and this, assuming as before that all other conditions remained the same, would have been impolitic, and looking at the matter in this light alone, the amount of additional currency issued was not in excess of the demands for trade. But a closer scrutiny of the economic conditions prevailing at the time indicates that there was a flaw somewhere, and that other conditions had not remained the same. Prices stood at 117 in 1904, 130 in 1905, and 153 in 1906; it has been shown that this heavy rise was not entirely due to meteorological conditions, and the question therefore arises whether the heavy coinage in the last two years of the period, 1905-06 and 1906-07, coupled with the heavy imports of sovereigns, was wholly necessary, and this can best be enquired into by comparing the period 1905-06 to 1908-09 with the previous four years, the four adverse years with the four favourable ones.

Council bills paid from 1905-06 to 1908-09 amounted to Rs. 141 crores against 127¾ in the previous four years, an increase of Rs. 13¼ crores, and the Government import of silver bullion paid by Council bills was Rs. 23½ crores in excess of that period, which reads that Rs. 10 crores were available to the public by means of Council bills less than in the previous period.

The public demand was as follows:—

Exports.

	1901-02 to 1904-05.	1905-06 to 1908-09.
	Rs. crores.	Rs. crores.
Merchandize	565½	669
Gold	14½	16
Silver	19½	7½
	599½	692½
Difference	93	

Imports.

	1901-02 to 1904-05.	1905-06 to 1908-09.
	Rs. crores.	Rs. crores.
Merchandize	341¾	462½
Gold	63¼	62¼
Silver	46½	41¼
	451½	566
Difference	114½	

This gives a very different complexion to the previous comparison. In the former one, the net exports were Rs. 58¼ crores higher than the previous four years. In the last comparison, the last four years show a higher net import of Rs. 21½ crores than in the previous four years, and silver prices in India rose from 117 in 1904 to 174 in 1908. A glance at the comparison between the two periods, and at the rise in prices, indicates that the economic conditions during the latter period were unsound. It may be argued that during the first three years of the period 1905-06 to 1907-08, exports and imports of merchandise increased enormously, that there was therefore every indication that trade was in a highly flourishing condition, and required currency to carry it on, and that consequently the large import of silver for coinage purposes was justified, and that this is proved by the fact that the heavy sales of Council bills were effected in England without affecting exchange, and thus it was clear that the full amount of coin issued was required in India under normal and legitimate conditions. It is, however, an economic principle in all countries that the amount of the active circulation does not in any way affect the exchange market, and that the exchange rates of a country, in its transactions with other countries, may remain steady even when the active circulation is either very redundant or very contracted. The exchange market in countries with a sound currency is only affected by the amount of loanable capital required and supplied. India's currency does not possess unlimited convertibility, nor is it automatic, and consequently the economic principles that apply to other countries do not necessarily also apply to India; consequently an adverse balance of trade in India does not necessarily imply that a fall in exchange is due to the want of loanable capital, but unsound as India's system is from an economic point of view, high exchange can never necessarily indicate the necessity of an increase in the active circulation. Since, therefore, the exchange rate, whether the result of a favourable or an adverse balance of trade, is no guide to ascertain whether the currency is redundant or contracted, the mere demand for money in payment of Council bills is no guide to whether that demand is real or artificial, and with a Government-regulated currency it becomes necessary to consider the semi-hidden aspects, as well as the apparent conditions, which may completely alter the action that should be taken. In the present case, apart from other conditions, the heavy imports of gold in addition to Council bills, the well recognised speculation that went on in silver, and the continued high level of prices for reasons other than scarcity conditions, indicate that the demand for currency was artificial. In this view it would seem that the heavy Government imports of silver, and its coinage, which swelled the circulation, were in excess of the actual legitimate trade demands. This plentiful supply of money in excess of legitimate requirements artificially encouraged the import of goods for which high prices could be obtained, and at the same time caused the price of food-stuffs in India to remain at a high level.

The comparisons made and arguments offered have been with reference only to recent years, but similar comparisons might be made with the earlier years since the circulation has been expanding, when outward signs indicated that the increase was necessary, but the rise in prices that has been steadily progressing, which continued high in years of prosperity, or in years in which the extent of the production was sufficient to warrant a fall in prices, indicate that the circulation has been higher than legitimate requirements for many years past. The table of active circulation shows that, apart from what happened in the earlier years, a rapid and heavy increase in the circulation commenced in 1899, the year in which legal tender sovereigns were first received into and issued from the treasuries, and that the import of gold for the purpose became high, and it may be inferred from this that the establishment of a gold currency in India contributed to the unnecessary expansion of the circulation, and that this was a factor that might advisedly have been considered in the question of coinage of rupees.

Thus summarizing this section of the subject, we find that even with years of scarcity intervening, the balance of trade remained favourable up to 1904, trade flourished, and the demand for coin continued in increasing quantities. As a result of these conditions, coupled with the fact that the exchange rates continued favourable, it was inferred that the heavy coinage only supplied the natural demands of trade. This coinage was, however, supplemented by a heavy import of gold which, under the law of 1899, was added to the currency of the country, the two metals together forming large additions to the circulation each year. Whilst this continued, silver prices, and especially food prices, continued to rise, and to a higher point than scarcity and other conditions warranted, and this condition was the necessary corollary to the inflated currency, and in accordance with the economic laws on the subject, conditions generally become changed, and a higher level of prices was reached as the years progressed.

In 1905 the conditions became more accentuated, and the balance of trade was reversed, and in that year, and in the three succeeding ones, the combined imports of gold, silver, and Council bills, which included the import of silver for coinage by Government, was excessive to an even greater degree than in the earlier years, and prices immediately responded to the highly inflated currency.

The imports of gold were clearly in excess of the needs of the country for purposes other than currency, and for currency purposes none was actually necessary, the imported sovereigns added to the circulation, and were an addition to Council bills to fill the gaps in the currency requirements caused by high prices. Their import assisted in reversing the balance of trade, and their sudden withdrawal from circulation by the public indicated the existence of speculation.

The imports of silver by the public were to a great extent due to speculation, which was unwittingly encouraged by Government making purchases of silver in India for coinage purposes.

The unprecedented sales of Council bills were mainly due to the heavy purchases of silver in England for export to India for coinage purposes to meet what was believed to be the legitimate trade demands of India. These heavy purchases, coupled with the gold and speculative silver imports by the public, caused the reversal of the balance of trade, and at the same time swelled the currency greatly in excess of the needs of the country, and assisted in causing prices to remain at a high level.

This brief review of the position, as ascertained from the balance of trade, prominently brings out the following points for consideration :—

(*a.*) The artificial currency system of India requires modification so that

(1.) Its working may be made automatic ;

(2.) Its medium of currency, the rupee, may be given unlimited convertibility.

(*b.*) The speculative import of silver requires prohibition, and this can only be done by the levy of a prohibitive duty on its import.

(*c.*) The gold standard of India does not require a gold currency, and its stability is on a sounder footing without one, provided the rupee is given unlimited convertibility.

TABLE XII.—*Paid-up capital invested in India.*

(In lakhs of rupees.)

Year.	Banking.	Railways and tramways.	Navigation.	Shipping, landing, and warehousing.	Mills.	Tea and other planting companies.	Mining.	Others.	Total of all companies.
1900-01	3,90	3,17	26	15	18,40	3,46	1,77	5,17	36,28
'01-02	3,95	3,25	24	16	18,70	3,60	2,02	5,48	37,40
'02-03	3,87	3,42	24	19	19,07	3,63	2,50	5,16	38,08
'03-04	3,98	3,51	24	19	18,82	3,65	2,64	5,71	38,74
'04-05	4,22	3,35	31	19	19,58	3,61	2,84	6,17	40,27
'05-06	4,50	3,28	31	28	20,35	3,53	2,97	6,62	41,84

17. *The effects of the import of capital.*

It has been suggested that the heavy imports into India, resulting in a reversal of the balance of trade, and heavy coinage, were caused by large importations of capital into the country. Capital imported into India is ordinarily imported through Council bills, but the public statistics give no information as to how much of the capital subscribed in the various undertakings is imported, and how much supplied locally, nor perhaps would it be possible to give it, but the increase of rupee capital in joint stock companies, with head offices in India, has been compiled since 1881-82, and the figures are given in Table XII for the years 1900-01 to 1905-06. It is perhaps unfortunate that figures for the two following years have not yet been published, but it seems doubtful if there were any large increase of capital in those years.

Taking the table for the period given with capital paid up, net nominal capital, we find the increase of banking capital in the six years to have been Rs. 60 lakhs. The whole or nearly the whole of this represented money locally subscribed. Railways and tramways, navigation, and shipping give a total increase of Rs. 29 lakhs, a portion of the tramways capital probably came from England, the remainder under all three heads was probably locally subscribed. Mills show an increase of nearly Rs. 2 crores in capital, of which the increase in jute mills alone was Rs. 140 lakhs, and in woollen mills Rs. 25 lakhs. The former was probably largely subscribed for in England, but all the other increases probably represent local subscriptions. Mining shows an increase of Rs. 120 lakhs, and a considerable portion of this was probably subscribed in England. Other companies show an increase of Rs. 145 lakhs, but as most of these consist of a number of small undertakings connected with trading companies, breweries, sugar, land and building, it is probable that almost the whole was locally subscribed.

The total paid up capital of all companies increased by Rs. 556 lakhs during the six years, and it may be estimated that not more than Rs. 250 lakhs (1,670,000*l.*) came from England. These figures, giving an annual average of 278,000*l.*, indicate that the import of capital into India played practically no part in reversing the balance of trade.

These remarks refer only to capital sent to India for permanent investment. In the case of loanable capital, its import cannot make any difference in a series of years, as it is only lent for a temporary purpose, and ordinarily has to be returned within twelve months. To add to this, loanable capital is only obtainable in any quantity when the currency of the country to which lent has unlimited convertibility, a condition that does not exist in India.

18. *The action of dealers in raising an artificial rise in prices.*

The action of grain dealers in India is a condition which perhaps has a greater effect in raising prices, and maintaining a high level, than is generally realized. In European countries, especially in America, important articles of food, such as wheat, and other articles, such as cotton, which affect other prices, are sometimes "cornered," and prices are artificially raised. The rise in price of a single article, provided it is of sufficient importance, reacts on other prices, and there may be a general rise of prices, but these "corners" can never be of long duration, and prices fall again, though if the "corner" is sufficiently effective to cause a rise in wages, which are very difficult to reduce, prices may remain at a higher level than they were before.

In India the initial stage of "cornering" is not ordinarily the result of the action of individuals, but of the elements, as represented by a deficient rainfall. This reduces the supply, and prices automatically rise, but the indications are that the prices to which food-stuffs have risen in certain years have not been raised entirely by the natural action of insufficient rain, or even by an inflation of the currency, but have been artificially raised, and this could only have been done by the action of dealers in food grains. These men do not actually form a ring for cornering purposes, but they belong to the same caste in each of the different parts of the country, and act together, apparently by instinct, and hold back their stocks, for the purpose of artificially raising prices, on the smallest encouragement, *i.e.*, the smallest shortage of grain, and in this way a slight scarcity may be converted into a serious famine, with famine prices.

When normal conditions return, after having reaped a rich harvest, if money is at the same time plentiful, they can afford to hold back their stocks, partly with the object of maintaining high prices, and partly for speculative reasons, gambling for another year of scarcity, and they have been encouraged in this manœuvre by the many years of apparent slight scarcity during the past fourteen years. If successive years of plenty follow, they are forced to sell, and prices fall, but only slowly, and they, having purchased their stock at a price nominally higher, as will be presently explained, than under normal conditions, appear to have it in their power to prevent it falling to a level lower than that price, which is a higher level than before the commencement of each gamble.

These dealers, ordinarily styled Bunniahs, are not only grain dealers, but also money lenders, and in that capacity, in consequence of the remarkable tendency of agriculturists in India to borrow money, may be the practical owners, or the tenants, of whole villages, and the surrounding acres of productive land, and with their natural trading instincts, and their knowledge of the general conditions, and trade of the country, they possess an immense advantage in fixing prices.

The Government is the actual landlord of all the land in India, but the Zamindars, and those to whom the land was originally leased, have held it on the Government lease for so many years—the permanently settled land since 1797—that they now regard themselves as the actual owners, and in that capacity, when they do not cultivate it themselves, they rent it out at rates regulated by the profit derived from the land, with the result that as prices have risen so also have their profits, and as the payment to Government, styled Land Revenue, represents only about 8 per cent. of the production of the land, against 33 per cent. in Akbar's time, 1600, and 50 per cent. in later years, the profits derived by the rise in prices have been enormous. This profit has not, however, necessarily always gone entirely into the hands of the Zamindars, or other nominal owner of the land, because the land may have been let, and ordinarily is, for a series of years at a fixed rent, based on its productive value for a series of previous years, but it may be accepted that the Zamindar ordinarily obtains a better bargain than the tenant in whatever arrangement is made, and that he increases the rent, as prices rise, and the production becomes more valuable, whenever he legally can do so. The tenant therefore receives the profit derived from the increase in the prices in the intervals between the raising of the rent from one figure to another, but the tenant is ordinarily in the hands of some money lender, as will presently be explained, and consequently his share of profit goes into the hands of that individual. Thus the cultivating agriculturist is ordinarily between the devil and the deep sea. The devil in the shape of the Zamindar bleeds him of every rupee possible by high rents, and he is forced to throw himself into the arms of the deep sea in the shape of the money lender in order to procure his financial necessaries, with the result that his independence is drowned, and he merely exists on the sufferance of his financial jailer.

The land in India is leased by Government to (1) Zamindars and village Communities with permanently settled assessment, (2) Zamindar and village Communities with temporary assessments and (3) Raiyats with temporary assessments. The Zamindari permanent settled area in 1906-07 covered 122,000,000 acres, and the land revenue assessed was Rs. 4½ crores, the Zamindari temporarily settled area covered 203,000,000 acres, and was assessed for nearly Rs. 10 crores, and the Raiyatwari area covered 279,000,000 acres, and was assessed for Rs. 14½ crores. In no province is the land yet fully assessed; as settlement of assessment proceeds year after year, the land revenue in the temporarily settled areas increases. The land revenue assessed in 1878-79 was Rs. 22 crores, and in 1905-06 it had increased to nearly Rs. 29 crores, indicating that if all cultivated land was fully assessed in both years, the value of the production increased from Rs. 300 crores in 1879 to nearly Rs. 400 crores in 1906. But as a matter of fact the land revenue assessments have nowhere kept pace with the increase in prices, and could not do so in the case of permanent settlements, and the actual increase in the value of the production has been very much greater.

In making the remarks that follow it may be pointed out that the system of cultivating tenancy in different parts of India, and even in a single province, differ greatly, and it is not a simple matter to condense the various systems into a brief paragraph. But one circumstance appears common to all systems, and that is in connection with the hold the money lending classes have acquired on the land generally throughout India. The following *résumé*, however, gives a general idea of the various systems which appear to prevail.

In former years, as in the present day, Zamindars rarely ever cultivated their own land, but let it out to Raiyats, and the tenant might be a single villager, or he might be an entire village community acting with one common interest, and sharing alike in the profits, and when labourers had to be employed, wages were paid in kind. When the land was leased by Government direct to village communities or to Raiyats, it was cultivated by themselves. It is probable that a number of cultivators were more or less in the clutches of money lenders from the outset, or very soon after. As time went on, the system gradually changed, and the number of small cultivators, who leased their land direct from the Zamindars, began to diminish, possibly driven from their tenures by money lenders, and larger cultivators, sometimes the money lenders themselves, obtained the tenant rights of the land, and either cultivated it themselves, or by deputy, or sub-let it to small cultivators, paying the wages of labour partly in cash and partly in kind. As time proceeded, the larger cultivators themselves fell into the hands of money lenders, and either had to give up the tenancy of the land, or probably more often retained the land, cultivated it, and hypothecated the whole of the produce to the money lenders who financed them. Wages, as the price of food grains became higher, ceased to be paid in kind, and were paid in cash only.

Numerous tenancy Acts, and other legislation against rack-renting, and irresponsible ejectment, aiming at keeping the tenant and land together, and protecting him from the rapacity of the landlord, and the cruelty of the money lender, have been passed at different times, but no law has yet been passed sufficiently protective to prevent the tenant from, sooner or later, falling into the hands of the money lender, and hypothecating to him his crops before they are sown, at ridiculous rates, and this appears to be the root of the whole mischief in this connection. The statistics show that the transfers of so-called ownership, or of tenant right, during the five years ending 1905-06, amounted to 3½ million acres, transferred by order of the Court, and 22¼ million acres transferred by private contract, or gift, probably to avoid the expense of going to law. It seems probable that a large share of these transfers represent land transferred to the real, though not the nominal, ownership of money lenders.

Thus it would seem that the grain dealers, who are also the money lenders, by a gradual but sure process of granting facilities to borrow money, and by the exercise of pressure to ensure its repayment, or the interest on it, have been gradually acquiring into their own hands either the actual or the practical tenancy of large tracts of land in India, and this, coupled with their legitimate profession, has given them immense facilities for regulating the market, and their policy, obviously beneficial to themselves, has been to maintain a high level of prices. They have been assisted in this by the redundancy of the currency, and by a series of years of doubtful prosperity, interspersed with years of possible scarcity.

Government has also unwittingly assisted them in the matter by its famine policy. That policy is humane, and as such no other policy would be possible, but it is clearly an assistance to high prices. Directly famine is declared, Government gives grain compensation allowances to its servants, and charitable relief allowances to others, and opens public works for agriculturists to attend and receive a daily wage. This wage, including the allowances to men, women and children, when combined in one family, is high, and the family, like all natives of India, takes no thought of the morrow, and spends its full wage on food at the artificially raised price. This enables the Bunniah to dispose of nearly as much grain in a famine year as he does in a plentiful one, and he sells it at famine prices, he himself having obtained it at a low price from the cultivator, who is his financial client, and who has been forced to hypothecate his crop to him in payment of the interest on the debt owing to him, and has probably obtained it at a rate lower than the market rate, even before prices began a fresh rise. If this crop is not sufficient for his trade needs, he imports grain from places where scarcity does not exist, or is in a lesser degree, and where prices are lower. The effect of this is that he obtains a supply at comparatively low prices, sufficient to meet the requirements of a normal year, the requirements of a famine year being increased to nearly the same as those of a normal year by the benevolent action of Government, this supply he sells at famine prices, realising an immense profit, and is able to dispose of the bulk of his stock by the time the following season opens, and, unless that season is an abnormally good one, he is able to continue to ask high prices, and to obtain them, keeping any stock remaining in hand as a balance for the gamble of a bad year following.

From this review it appears that though the action of the grain dealers has not necessarily originally caused a rise in prices, it has materially assisted in causing them to remain at a high level. It would be very difficult to remedy this state of affairs, but it is clear that some effort might be made, even though it might not necessarily succeed, and it would in any circumstances cost money. The initial cause of the capture of the agriculturist by the grain dealer is the inherent characteristic of the former to borrow money. This appears to be necessary, mainly to comply with caste customs, for example, whenever any marriage or death occurs in the family, or even anniversaries of deaths. These customs are apparently encouraged by the priests, who presumably make some profit out of them, and to carry them out a man earning Rs. 5 or Rs. 6 a month thinks nothing of borrowing Rs. 100 or more, thus crippling himself and his family for years, by which time another occasion arises, which necessitates further borrowing, and so on. It would perhaps not be possible to put a stop to these customs, as it might interfere with caste or religious principles, but since the money must be obtained from somewhere, the remedy seems to be to give facilities for the borrowing of money at moderate rates of interest, and thus remove the necessity of borrowing from money lenders at exorbitant rates. It may be noted that the rate of interest usually charged by money lenders in some parts of India is one anna a month for every rupee lent, which means interest of 75 per cent. per annum.

The comparatively recent introduction of credit co-operative societies appears to be a possible eventual solution to the difficulty, and though the success of these societies, so far, has not been great, it is because their value does not appear to have been properly recognised, and the scheme has not been sufficiently pushed. Credit co-operative societies, whether rural or urban, are instituted with the main object of providing capital for the purpose of lending money at reasonable rates to those belonging to the society requiring it, and thus preventing them from borrowing from money lenders at high rates. There certainly appear to be immense possibilities in this direction, and it might be advisable to push these societies rapidly throughout India, and for Government to be prepared to make large grants for their establishment, and for their superintendence and audit.

The classes that have gained most by the heavy rise in prices are the Zamindars in the permanently settled districts, and the money lenders throughout India. The Zamindars, like all other land holders, both in permanent and temporary settled districts, pay no income tax on their incomes derived from the land. The enormous increase in their profits on land, derived from the fact that their original settlements were made permanent, represents an unearned increment, which probably even Lord Cornwallis never intended, and these landlords might justly now be required to pay income tax on land, and the proceeds might be allocated to the furtherance of credit co-operative societies. Money lenders are already supposed to pay income tax, but probably not a fraction of the amount they should pay, and there appears to be no way of making them do it, or to make them assist the societies by any special taxation.

But whatever is done in the direction of these societies must necessarily take time, and the question arises whether anything can be done to give earlier relief. It might be possible to pass laws to prevent the hypothecation of crops before they are cut, to appoint arbitrators to assist the ignorant in fixing the price in cases when a large portion of a crop is sold or hypothecated to an individual or firm, and to limit the rate of interest that may be charged on money borrowed on the security of agricultural produce. But these are all intricate administrative questions, to which objections may be raised, and need not be discussed here. The suggestions are offered on the principle that serious disease requires serious remedies.

19. *The action of the extension of railways on prices.*

It has sometimes been suggested that the extension of railways in India has had the effect of raising prices, because directly the railway reaches a particular locality, the local demand for food grains is at once increased, either for export purposes, or for a supply to other parts of India, which the railway renders possible, and cases have been quoted showing the great rise in price that sometimes takes place. Railway construction has proceeded as follows:—1881 = 10,000 miles, 1891 = 17,000, 1901 = 25,000, and 1909 = 31,000 miles, and if 20 miles on each side of the line is estimated as brought within reach of it, the area affected since 1881, when the level of food prices was still 100, amounts to 840,000 square miles. If, therefore, there is any strength in the argument, the rise in the level of prices is at once explained. In regard to exports, it is quite possible that the extension of railways, giving greater facilities for carrying the produce to the ports, might, under certain circumstances, have caused a rise in prices, but if the increase in the volume of exports of food grains since 1881 is compared with the increase in the area to supply those exports, the fallacy of the argument at once becomes apparent. The export of food grains in 1881-82 amounted to 50,000,000 cwts. In 1906-07, 1907-08, and 1908-09 the export was 59, 61½ and 35 million cwts. respectively, with over 800,000 square miles of land added, from which the additional grain for export could be taken.

In places where production is good, and supplies plentiful, and local prices consequently low, they may have risen on the arrival of the railway, because it renders possible the transfer of the surplus stocks to other places where prices are higher, but it equally happens that the arrival of the railway has the effect of lowering prices, when it reaches tracts which are not productive and well supplied, and the real effect that railways have had on prices in India has been to level them throughout the country, with a tendency to lower that level, as the non-productive localities are more numerous than the productive.

20. *A rise of prices outside India of imports into India, or of exports from India.*

This argument is based on the assumption that the gold prices of India's imports and exports have risen in recent years. If this were actually the case, goods imported into India, or those exported from India would necessarily rise in silver price, and sooner or later all prices in India would be affected. If the rise of price were only in the imports into India, India would have to pay that higher price, and to do this, would have either to reduce her imports or to increase her exports. If she reduced her imports it might have the effect of again lowering their price, and if the rise in price outside India had been due only to temporary conditions, prices of imports might revert to their former level. If, however, the conditions of the rise had been of a permanent character, the demand in India would necessarily increase again, even at the higher price, and it would then become necessary to increase the exports. This increase would, unless the supply was simultaneously increased, cause the demand to exceed the supply at its former price, and prices of exports from India would rise, which would eventually affect all prices in India.

If the rise of price outside India was only in exports from India, it would indicate that the supply was not equal to the demand, and the large profits derived in India by these exports would increase the supply, and thus prices outside India would fall again. If, however, they did not do so, it would indicate that the supply was still insufficient for the demand, and the increase in the supply would raise the price in India, that price depending on the margin of cultivation, and eventually the price in India and outside would equalise by natural process. If the price of articles of both import into, and export from, India simultaneously rose, it would ordinarily indicate that prices generally had appreciated outside India in relation to gold, and this would eventually cause prices generally in India also to rise.

The imports into India are on a somewhat different footing to the exports from India. The imports consist of a collection of articles which are produced in other countries for their own use, and for trade, and they reach India in the ordinary course of trade. The exports from India consist, to a considerable extent, of articles of little or no use in the country, but which are cultivated or produced mainly, or to a great extent, for export, and some of these articles are practically monopolies, perhaps shared with some other country or countries. For example, tea, coffee, indigo, opium, hides and skins, saltpetre and seeds, and the export of these articles in 1907-08, when the total value of exports of Indian merchandise was Rs. 173½ crores, amounted to Rs. 87 crores, or 50 per cent. of the export. In addition to this a large quantity of rice (export Rs. 20 crores) is grown solely for export purposes, more especially Burma rice, which is peculiarly well suited for distillation purposes. The conditions which govern the price of such exports must therefore necessarily differ from the conditions that govern the price of other exports and of imports.

The price of imports is governed primarily by the price of goods in gold standard countries, and the price of any particular article is dependent on the supply and demand, the supply being dependent on the extent of competition to produce the particular article in a number of countries, all of which can compete. Thus taking a number of articles, *e.g.*, general prices, the price may be said to be generally dependent on the appreciation or depreciation of gold in relation to goods in a number of countries capable of competition in their production.

The price of export monopolies is governed by the supply sent to, and the demand in, the countries to which sent, but, unlike imports, the supply cannot be increased at pleasure, but depends solely on the exports of the country or countries sending it. The price of imports into India is, therefore, ordinarily dependent on the appreciation or depreciation of gold in relation to goods, whereas the price of export monopolies, or partial monopolies, is dependent on the supply and demand, ordinarily irrespective of the appreciation or depreciation of gold in relation to goods.

Column 6, Table II, gives the Indian index numbers of the bulk of the imports imported into India, column 8 gives Mr. Sauerbeck's index numbers of all gold prices, and column 12 his index numbers of 11 articles exported to India, and shown in column 6. In column 12 lead has been substituted for spelter, and the figures for salt have been independently worked out, as Mr. Sauerbeck does not give spelter and salt.

Column 6 shows that there was no material increase in price in India till 1906, when prices rose 9 points, and a further rise of 12 points in 1907 followed by a drop of 9 points in 1908. The price of these imports in England, column 12, was practically the same up to 1907, when a slight rise of 7 points took place, followed by a drop of 10 points in 1908. The rise of the gold price of India's imports was therefore small, and temporary, and could not have affected rupee prices of India's home products.

Column 11 of Table II gives the prices in India of India's exports, and column 13 gives Mr. Sauerbeck's gold prices of 11 articles which India exports. Column 11 shows no rise since 1901 till 1906, when prices rose 15 points, followed by another 8 points in 1907, and a drop of 5 points in 1908. The gold price of exports from India may, however, sometimes be modified by the rate of steamer freights ruling each year, but column 13 giving the gold price of 11 articles of India's exports shows that though there was a rise in price from 1905, it was not so great as the rise in India. The index numbers run 67, 70, 75, 75, 69.

An examination of the conditions indicated that the gold prices of India's imports and exports have had no influence on silver prices in India generally, but that the high prices ruling in India during the past three years may have had some effect in raising prices in gold standard countries.

21. *A Summary of the causes affecting prices, and the conclusions arrived at.*

We are now in a position to summarize the arguments that have been offered on each of the causes suggested as liable to affect prices, and Table XIII brings together the various statistical points of importance in the argument.

The price of food-stuffs in India stood at 71 in 1843, (falling to 63 in 1855,) and rose by a gradual process to 139 in 1905, with intervening years of higher prices due to special causes, and finally sprang to 167, 178, and 202 during the past three years respectively. An examination of the period indicates that, apart from special

TABLE XIII.—*Summary of the principal figures bearing on prices.*

1 Year.	2 Prices food index numbers.	3 Level of prices.	4 Rainfall index numbers.	5 Active circulation crores of rupees.	6 Coinage of rupees in lakhs.	7 Balance of trade in lakhs + in favour − against.	8 Net import gold + production in India from 1891 in lakhs of rupees.	9 Net import silver in lakhs of rupees.	10 Import Council Bills in lakhs of rupees.	11 Import goods in crores of rupees.	12 Export goods in crores of rupees.	13 Gold price of India's imports index numbers.	14 Gold price of India's exports index numbers.	15 Weight of food crops exported, cwt. 000's omitted.	16 Index number, wages.
1835–36	—	—	—	24	2,25	—	33	1,61	—	5	11	—	—	—	—
’36–37	—	—	—	23	3,74	—	42	1,34	—	6	13	—	—	—	—
’37–38	—	—	—	23	3,05	—	43	1,97	—	5	11	—	—	—	—
’38–39	—	—	—	26	3,79	—	26	2,65	—	5	12	—	—	—	—
’39–40	—	—	—	26	2,82	—	23	1,65	—	6	11	—	—	—	—
1840–41	—	—	—	26	2,79	—	14	1,40	—	8	13	—	—	—	—
’41–42	—	—	—	27	3,76	—	17	1,28	—	8	14	—	—	—	—
’42–43	—	—	—	26	3,07	—	21	2,95	—	8	14	—	—	—	—
’43–44	71	72	—	25	4,46	—	41	3,70	—	9	17	—	—	—	—
’44–45	71	72	—	26	4,34	—	71	1,99	—	11	17	—	—	—	—
’45–46	80	72	—	28	3,37	—	54	93	—	9	17	—	—	—	—
’46–47	89	72	—	25	2,81	—	85	1,37	—	9	15	—	—	—	—
’47–48	76	72	—	26	1,67	—	1,04	− 49	—	9	13	—	—	—	—
’48–49	66	72	—	23	2,44	—	1,35	31	—	8	16	—	—	—	—
’49–50	66	72	—	21	2,06	—	1,12	1,27	—	10	17	—	—	—	—
1850–51	66	72	—	20	2,49	—	1,15	2,12	—	12	18	—	—	—	—
’51–52	71	72	—	19	4,13	—	1,27	2,87	—	12	20	—	—	—	—
’52–53	76	72	—	21	5,27	—	1,17	4,61	—	10	20	—	—	—	—
’53–54	71	72	—	23	5,14	—	1,06	2,31	—	11	19	—	—	—	—
’54–55	76	72	—	24	1,16	—	73	3	3,63	13	19	—	—	—	—
’55–56	63	72	—	26	6,78	—	2,51	8,19	1,80	14	23	—	—	—	—
’56–57	65	72	—	32	10,38	—	2,09	11,07	2,91	14	25	—	—	—	—
’57–58	69	72	—	40	12,08	—	2,78	12,22	1,28	15	27	—	—	—	—
’58–59	70	72	—	50	6,24	—	4,43	7,73	5	22	30	—	—	—	—
’59–60	80	—	—	53	10,04	—	4,28	11,15	1	24	28	—	—	—	—
1860–61	90	—	—	56	4,83	—	4,23	5,33	—	23	33	—	—	—	—
’61–62	89	—	109	56	6,91	—	5,18	9,09	77	22	36	—	—	—	—
’62–63	84	—	110	63	8,99	—	6,85	12,55	5,94	23	48	—	—	—	—
’63–64	85	—	105	73	11,27	—	8,90	12,80	9,41	27	66	—	—	—	—
’64–65	97	—	87	86	10,11	—	9,84	10,08	7,19	28	68	—	—	—	—
’65–66	109	100	98	99	14,41	—	5,72	18,67	6,42	30	65	—	—	—	—
’66–67	130	100	92	105	5,93	—	3,84	6,96	5,94	29	42	—	—	—	—
’67–68	124	100	104	106	4,17	—	4,61	5,59	3,82	36	51	—	—	—	—
’68–69	107	100	81	109	4,01	—	5,16	8,60	4,60	36	53	—	—	—	—
’69–70	121	100	97	113	7,26	—	5,59	7,32	5,88	33	52	—	—	—	—
1870–71	104	100	100	107	1,41	—	2,29	94	9,71	34	55	—	—	—	—
’71–72	85	100	98	101	1,64	—	3,57	6,52	9,96	32	63	—	—	—	—

TABLE XIII.—*Summary of the principal figures bearing on prices—Contd.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Year.	Prices food index numbers.	Level of prices.	Rainfall index numbers.	Active circulation crores of rupees.	Coinage of rupees in lakhs.	Balance of trade in lakhs + in favour − against.	Net import gold + production in India from 1891 in lakhs of rupees.	Net import silver in lakhs of rupees.	Import Council Bills in lakhs of rupees.	Import goods in crores of rupees.	Export goods in crores of rupees.	Gold price of India's imports index numbers.	Gold price of India's exports index numbers.	Weight of food crops exported, cwt. 000's omitted.	Index number, wages.
1872–73	91	100	102	101	3,59	—	2,54	72	15,06	32	55	—	—	—	—
'73–74	96	100	89	101	2,01	—	1,38	2,50	14,26	34	55	—	—	—	—
'74–75	107	100	105	105	4,42	—	1,87	4,64	12,00	36	56	—	—	—	—
'75–76	92	100	106	101	2,11	—	1,54	1,56	14,50	39	58	—	—	24,310	—
'76–77	98	100	85	104	5,79	—	21	7,20	14,49	37	61	—	—	27,522	—
'77–78	142	100	87	114	15,94	—	47	14,68	10,33	41	65	—	—	26,723	—
'78–79	155	100	110	118	7,00	—	− 90	3,97	17,47	38	61	—	—	23,500	—
'79–80	137	100	101	123	10,08	—	1,75	7,87	17,99	41	67	—	—	25,640	—
1880–81	108	100	90	124	4,21	—	3,66	3,89	18,21	53	75	—	—	26,516	—
'81–82	93	100	98	120	1,86	—	4,84	5,38	22,13	49	82	—	—	51,107	—
'82–83	93	100	100	119	6,00	—	4,93	7,48	18,42	52	83	—	—	48,233	—
'83–84	96	100	99	119	3,39	—	5,46	6,41	22,11	55	88	—	—	51,212	100
'84–85	107	100	100	120	5,55	—	4,67	7,25	16,03	56	83	—	—	40,693	102
'85–86	107	100	102	126	10,10	—	2,76	11,61	14,40	56	84	—	—	51,996	104
'86–87	103	100	106	128	4,04	—	2,18	7,16	16,74	62	88	—	—	52,453	104
'87–88	103	100	104	131	10,16	—	2,99	9,23	20,82	65	91	—	—	46,058	105
'88–89	111	—	98	133	6,77	—	2,81	9,25	22,01	69	97	—	—	43,860	106
'89–90	116	118	106	135	8,00	—	4,62	10,94	22,61	69	103	—	—	40,551	108
1890–91	118	118	104	139	12,90	—	5,64	14,18	19,09	72	100	—	—	50,374	108
'91–92	123	118	91	141	5,08	—	3,13	9,02	23,95	69	108	—	—	68,753	108
'92–93	138	118	112	149	12,08	—	− 1,82	12,86	26,98	66	107	—	—	46,242	109
'93–94	131	118	120	143	4,14	+ 1,17	1,90	13,72	16,42	77	107	56	67	41,417	111
'94–95	121	118	113	145	—	+ 8,22	− 3,54	6 33	28,88	74	109	48	63	45,377	111
'95–96	113	118	92	150	—	+ 4,76	4,25	6,58	33,08	73	114	50	62	49,845	109
'96–97	133	118	86	153	—	− 2,28	4,39	5,86	25,23	76	104	54	64	35,086	110
'97–98	171	118	95	152	49	− 2,01	7,27	8,47	14,79	74	98	54	64	31,956	112
'98–99	131	118	96	150	42	+ 5,99	8,92	3,98	28,38	72	113	53	66	62,222	114
'99–00	122	118	70	166	1,30	− 2,59	12,02	3,58	27,93	75	109	61	67	45,591	112
1900–01	152	125	101	171	17,15	+ 5,13	3,68	9,51	19,26	81	108	74	69	33,506	113
'01–02	148	125	91	170	4,95	+ 3,24	4,83	7,19	27,83	89	125	62	63	44,232	111
'02–03	131	125	89	175	11,27	+ 5,25	11,72	6,96	28,08	86	129	58	64	63,782	116
'03–04	124	125	104	188	16,17	+ 8,99	13,39	13,65	35,71	93	154	65	66	77,790	118
'04–05	118	125	91	200	10,88	+ 65	13,26	13,26	36,12	104	158	67	67	102,660	123
'05–06	139	135	84	215	19,60	− 2,72	4,08	15,72	47,70	112	162	66	70	67,976	122
'06–07	167	135	99	241	25,37	− 2,42	18,20	24,01	50,47	117	177	68	75	59,383	123
'07–08	178	135	90	242	17,32	− 2,80	21,27	19,46	22,78	137	177	75	75	61,224	128
'08–09	202	135	98	223	2,51	− 4,54	8,46	12,07	20,07	129	153	65	69	34,577	—

rises due to special causes in certain years, the level of prices has varied and risen as time proceeded, and the level may be subdivided as follows :—

	Level of food prices index number =
(1) From 1843 (or earlier) to 1858	72
(2) „ '65 to 1887	100
(3) „ '89 „ '98	118
(4) „ 1900 „ 1904	125
(5) „ '05 to date	135 or higher

The successive higher levels of prices have caused considerable hardship in India, and the purpose of the arguments offered in this paper has been to endeavour to ascertain the causes which have brought about the results, and, if possible, to suggest remedies to prevent a continuation of the same process in the future.

The rainfall of the year has been shown to have had the greatest influence of all conditions on prices in India. The fact that the crops in India are mainly dependent on the extent of the rainfall is sufficient evidence to show that when the rainfall is deficient, the crops also must be deficient; this results in the supply of necessaries not equalling the demand, and prices rise. But it equally stands to reason that if the rainfall *alone* had to be considered, a normal rainfall succeeding a deficient one, with high prices, would cause prices to fall again, which, all else remaining the same, would necessarily sooner or later revert to their former level. This, as shown, has not been the case, and consequently it may be accepted that although deficient rainfalls have been the cause of high prices, though not as high as have actually been reached during the period affected, they have not been responsible for the series of rises in the level of prices after the effects of bad years have passed, and consequently we must look to other causes for these changes in the level.

Our next enquiry is in respect to the circulation of the currency. Nearly all the old economists, and many recent ones, maintained that the extent of the circulation of the currency is one of the most important factors in regulating prices. In recent years this theory has been more or less controverted by some economists, but both strength of argument, and economic reasoning, appear to establish the fact that the circulation is an important factor in this connection, though many circumstances in the economic conditions of the present day make it of less importance than it was formerly, and to take a single example, the extension of credit has largely reduced the importance of the theory. In India the changes in the economic conditions affecting the question have been considerably less than in the West, and it may be accepted that the extent of the circulation of the currency in India still plays an important part in the question of prices.

Looking at the table of the circulation at the end of each year, we find that it has steadily, and in some years, rapidly, increased, that the increase when heavy in any year, or series of years, has ordinarily been during the existence of famine or other special conditions, and that at the termination of those conditions, when prices should have reverted to normal figures, they assumed a higher level owing, either to the inflation of the currency, or to other causes assisted by the inflation. Glancing next at the causes of the increases in the circulation, we find the question inextricably mixed up with the system of currency in India, both before and since the mints were closed to free coinage. Whilst the mints were still open they attracted silver to the country in excess of its needs, and thus inflated the currency. Since the mints were closed, a combination of circumstances, the supply of gold currency, the speculation in silver bullion, and the heavy trade demands for coin, based on the requirements of artificially high prices, resulting in excessive coinage, has similarly inflated the currency in excess of the actual requirements of trade at normal prices. We find, however, that although the rapid and heavy increase in the circulation has caused it at different times to become redundant, and may have assisted in raising prices temporarily, yet it cannot be held entirely responsible for the maintenance of prices at the high levels reached, and that prices have not reverted to a lower level, partly, to a small extent, in consequence of the rise in wages in India, due to the fact that the supply of labour has not been equal to the demand caused by new industries, irrigation, mining, &c., but mainly in consequence of the action of grain dealers, who are also money lenders, in holding up prices, a power which they possess by the practical monopoly of the grain trade, gained by them by securing possession of the bulk of the food crops of the country, and they have been assisted in carrying out this policy by the inflation of the currency. This action, clearly to their own benefit only, has necessitated the adjustment of the balance of trade at higher levels, as time proceeded, requiring further additions to the circulation to carry out each adjustment, resulting in excessive coinages, as compared with the necessities of trade at a lower and normal level. This process has been repeated after each occasion on which prices have temporarily risen, under the action of scarcity or other conditions, and in this way prices have gradually ascended and reached their present level.

We also find that the Indian currency system, which does not possess unlimited convertibility, nor is automatic, has facilitated the periodical redundancy of the currency, and that the working of it, in accordance with the apparent demands of trade, based on the rate of exchange, has shown that the system is faulty, and should be put on a line, as far as possible, with the currencies of other countries possessing a sound currency.

Of the other causes suggested as possibly influencing prices, we find that none are of any practical importance, that some may have assisted in a temporary rise in price, but that none have had a permanent effect, and are not responsible for the successive rises in the level of prices.

To tabulate the summary we find :—

(1.) That prices have not only risen heavily at times, but they have reached a series of higher levels during different periods.

(2.) That prices have risen in consequence of deficient rainfalls, and that they have not fallen to their former level at the termination of the scarcity period.

(3.) That the termination of scarcity periods with high prices has ordinarily been accompanied by a redundant currency.

(4.) That this redundant currency has assisted the class of traders who possess a practical monopoly of the food crops in India in maintaining a high level of prices.

(5.) That the question of a redundant currency is mixed up with the currency system of India, and that the redundancy has been due to the fact that the system is not automatic, and that the medium of circulation does not possess unlimited convertibility, and that consequently more gold has been imported, and more silver has been coined, than trade requirements necessitated at a lower and natural level of prices.

(6.) That the rise in wages, due to the supply of labour not being equal to the demand, has contributed, in a very small degree only, to the rise in the level of prices.

22. *Remedies suggested.*

There is no complete remedy to a deficient rainfall. Extension of irrigation is a palliative, but not a remedy, and irrigation is already extended to the utmost limit possible. An indirect remedy has been suggested that Government should undertake the import of food grains into provinces or districts where scarcity conditions prevail, but this is an extreme measure, and one very difficult to carry out, if the intention is to prevent a rise in prices elsewhere. The question of interference with trade need not be considered in this connection, since it would only interfere with illegitimate trade fostered by the money-lending class, but it is doubtful if the suggested action by Government would really affect prices to any appreciable extent, even if it were possible to carry it out.

In regard to the action of the money lenders in maintaining high prices, the remedies are (1) to deprive them of their present practical monopoly gained by the hypothecation of crops to them; and (2) to contract the currency and prevent its becoming inflated in the future.

On the first point certain suggestions have been made in Section 18 of this paper, in view to giving protection to cultivators, but it is doubtful if any appreciable results would follow for many years. On the second point, and this might have early effect, and deprive the money lenders of some of their power, a contraction of the currency is always possible by stopping the coinage of rupees, and this is already being done. But this is of little use if Council bills are sold in excessive quantities to hasten the transfer of the gold standard reserve held in silver in India to England, in gold, because the rupees so issued from reserve in India are equivalent to new coinage. In such a case it would be wiser to allow the reserve to remain in silver till it becomes possible to transfer it to England without risk. Similarly, measures should be taken to prevent additions to the currency by the import of sovereigns, and in order to prevent a recurrence of redundant currencies the currency system should be modified and placed on an automatic footing, so that the currency may expand or contract automatically without intervention, and the rupee should be given unlimited convertibility, so that loanable capital for trade purposes may be obtained without difficulty.

23. *Proposed modifications in the present gold standard system.*

The main faults in the present conditions of the gold standard system in India appear to be—

(1) The rupee is not convertible to an unlimited extent at any time, and it is therefore difficult to obtain loanable capital for trade purposes, a condition which exists in all countries with a sound currency system.

(2) The currency is a regulated one, and automatic conditions do not exist, another condition in every country with a sound currency system.

On the first point, no currency system can be fully successful in any country without unlimited convertibility at fixed rates within certain limits and at any time, in other words the rupee in India should be convertible into sovereigns in England, and the sovereigns in England be convertible into rupees in India, within fixed limits of exchange, at any time, and for any amount. Sovereigns in England are convertible into rupees in India through the medium of Council bills and telegraphic transfers (wired Council bills), but the amount so available is limited at the discretion of Government, and they are not available at any time, but once a week only. Sovereigns can now be sent to India and converted into rupees there, but this does not constitute immediate convertibility. Sovereigns in England are often required to be converted into rupees in India at very short notice, and merchants are prepared to pay a higher price for them when obtained at once, as proved by the fact that telegraphic transfers sell at a higher rate than ordinary Council bills, and if telegraphic transfers are not available, the sovereign is not convertible into rupees.

Rupees in India can be converted into sovereigns in England by purchasing sovereigns in India, and remitting them to England, but this condition is only nominal in consequence of the difficulty, if not impossibility, of collecting a sufficient number of sovereigns for the purpose, and even if it were possible, the delay in the long journey, as in the case of sovereigns sent to India, removes the condition of immediate convertibility. The only occasion on which an approach to immediate convertibility has been granted for home remittances was when gold bills on England were offered to the public, and this concession was only temporary, and for limited and uncertain amounts, and given only because exchange was on the decline.

The non-convertibility of the rupee is best exemplified by the wide margin between the rates of discount that prevails at times in England and the Continent, and in India. The Bank of England rate of discount may be 2 or 3 per cent., and at the same time the Indian rate may be 6 or 7 per cent.

In England and on the European Continent, unlimited convertibility is practically a condition, and this is carried out by the power of the country to draw gold into it when wanted, and to prevent its export when it cannot be spared. In France, for example, if the gold reserve falls low, the bank rate is slightly raised, and gold is accordingly drawn into the country, and this rate continues high as long as additional gold is required. It may happen, however, that a more favourable rate is obtainable elsewhere, and the capitalist, who sent gold to France, may wish to withdraw it to send elsewhere, but if France cannot spare it, she places a premium on the export. This has the effect of keeping gold in the country, but the knowledge that this may be done does not prevent gold being sent there when rates are favourable. There is no reason why India, with her silver currency on a gold standard basis should not make her rupee unlimitedly convertible, and regulate her requirements in the same way as France and other countries do, and with a convertible rupee the rates of discount in England and in India should ordinarily be approximately the same, and when loanable capital is required, a slight rise in the Indian rate should draw sovereigns converted into rupees readily to India, and *vice versâ*.

On the second point, automatic conditions are closely connected with, and are as necessary as unlimited convertibility. Under the present currency system in India, the supply of money, whether by means of Council bills, or by coinage, is regulated by Government. It is true that if the money supplied in India through Council bills is not sufficient, sovereigns can be sent from England to India, and this has been done to a considerable extent in recent years, and it will be argued that currency is thus automatically drawn into the country, precisely as it is in France and other countries when required, only by another method. This argument, however, omits consideration of the distance between England and India, and the resulting delay and expense. The circumstances of recent years have shown that the supply of money and its coinage has practically been regulated by Government, and that the guide to the currency requirements has apparently been the demand for Council bills, and the steadiness of exchange. But the arguments in this paper indicate that this has not been altogether a safe or a correct guide, and that the currency has repeatedly become unnecessarily inflated, and prices risen, resulting in a disturbance in the internal economic conditions of India.

A currency can ordinarily only be absolutely automatic if one of the conditions is the free coinage of the metal which constitutes either the standard or the medium of circulation. In England and Germany, with a gold standard, there is free coinage of gold. In France, and the Latin Union countries, a double standard is nominally in existence, as both metals are legal tender for any amount at a fixed rate of 15½ : 1, but in practice the standard of these countries is now a gold standard, because gold can be freely coined, and the coinage of silver is limited to fixed quantities in proportion to the population. This limit in the coinage of silver prevents gold from being driven out of the country and practically substitutes the double standard into a gold one. In India there is no free coinage of either metal, and apparently no fixed principle for the regulation of the coinage, except as represented by the demand for bills, and the exchange rate. The currency system of India is similar to that of France to the extent that gold and silver are both legal tender for any amount, the two metals are interchangeable at a fixed rate within the country, and silver is the principal medium of circulation, but there the similarity ends, and the question arises whether India's system could not be further extended, and made for all practical purposes the same as that of France. Exact similarity could only be acquired by India opening her mints to the free coinage of gold, and limiting her coinage of silver to a fixed annual percentage of the population.

The main arguments against such a system are (1) that India has a large annual debt payable in gold (2) that India's conditions require silver as the circulation, and practically silver only, and (3) that free coinage of gold in India would absorb considerably more of the annual production of the metal than it already does, and would dislocate all the currencies of the world. The first argument is without force. Many gold standard countries have heavy gold debts, and it is immaterial whether those debts are due only for the payment of interest on loans, or for the payment of services or pensions elsewhere as well, the debt remains the same however incurred, and those countries have no difficulty in maintaining a gold standard with a gold currency. The second argument is equally weak. If France can maintain her standard without difficulty with little gold in circulation, there is no reason why India should not do the same. The third argument is, however, unanswerable. Without free coinage of gold India absorbed 10·56 per cent. of the gold production of the world during the past ten years, 1899 to 1908, and in the two years, 1906 and 1907, she absorbed over 16 per cent. of the production, and with free coinage in the country it is not possible to say how much would be absorbed, but it may be accepted that gold would become seriously appreciated, prices all over the world would be seriously affected, and currency systems would become dislocated.

Since, therefore, free coinage of gold in India is impracticable, the only alternative appears to be to establish free coinage of some other metal, the value of which can be fixed at a fixed ratio to gold, and this seems possible by raising the price of silver bullion to a fixed ratio with gold, and opening the mints to the free coinage of silver at that ratio. In other words if the value of silver in India was raised to 16*d.* to the rupee by the levy of an import duty on its import, with a corresponding seigniorage on the metal if presented at the mint when not directly imported, the rupee would become fixed in its relation to the sovereign at the ratio of 16*d.* to the rupee, and the mints might be opened to free coinage on these conditions, and the currency would then become automatic and would possess unlimited convertibility. The conditions would practically be the same as if gold instead of silver were freely coined.

With these remarks the suggested details of a gold standard scheme, in modification of the present currency system, are offered in the next section of the paper. The suggestions are practically the same as those submitted by the writer to the Indian Currency Committee that sat in London in 1898.

24. *Details of a modified gold standard system.*

1. The present gold reserve to be *at once* raised by loan in England to 30,000,000*l.* sterling, the whole to be held in gold only, but up to a limit of 10,000,000*l.* to be held in England as part of the Indian paper currency reserve, the corresponding amount, Rs. 15 crores in silver, being held in India as part of the gold standard reserve.

(This is necessary to provide a fund to meet silver bills in India, when the cash balance is unable to meet them.)

2. The gold sovereign to be legal tender in India (as at present) for any amount at the fixed rate of 16*d.* to the rupee, but the treasuries to cease to issue them, and an import duty of 5 per cent. to be levied on all gold imported into India, whether sovereigns or bullion.

3. A duty to be levied on the import of silver bullion into India, so as to make the price of the silver equal to the face price of the silver in the rupee, the value of the rupee being fixed at the import point, on the basis of 16*d.* to the rupee.

4. The Indian mints to be opened to the free coinage of silver under the following conditions:—

(*a*) If the silver which has paid import duty is transferred direct from the vessel to the mint for coinage, no seigniorage will be charged.

(*b*) If silver is otherwise tendered at the mint for coinage, a seigniorage will be charged equal to the price that would have been paid at the time of tender at the mint as import duty, if the silver had been imported.

5. The present system of payment of India's gold debt by the auction sale of Council bills to the highest bidder to be abolished, and in lieu thereof silver bills on India to be obtainable at the Bank of England, for any amount, and at any time, at the fixed rate of 16*d.* for every rupee required, subject to the conditions in paragraph 9, the payment of the tender to be made in London in sovereigns in even hundreds, and subject to a minimum tender of 10,000*l.*

(India is the only country in the world that pays its gold debt by means of the auction system.)

6. Gold bills to be obtainable in India for any amount, and at any time, at the fixed price of 16*d.* for every rupee tendered, subject to the conditions in paragraphs 10 and 11, the payment of the tender to be made in India in rupees in even thousands, and subject to a minimum of Rs. 1,00,000.

7. The gold received in England for silver bills on India to be deposited in the Home Treasury balance to be utilized for Home

charges, and when that balance exceeds a fixed maximum, to be deposited into the gold standard reserve in England. The silver bills on India to be paid in India from the cash balances, and when these have been exhausted, from the silver held in the gold standard reserve in India.

(The gold standard reserve in England and India jointly will ordinarily be a fixed amount, and when it is added to or reduced in either country, a corresponding reduction or addition will be made in the other. This condition is not obligatory, and will not be observed when permanent additions are made to the Reserve.)

8. The silver received in India for gold bills on England to be deposited in the Government cash balance, if that balance requires it, and if not, into the gold standard reserve held in India. The gold bills on England to be paid from the Home cash balance, and when that reaches a fixed minimum, from the gold standard reserve in England.

9. If the demand for silver bills on India shows signs of excess, and prices rise, or if already high, for reasons other than existing scarcity conditions, do not fall to their former level, it will indicate that the circulation in India is redundant, and requires correction, and a premium of one or more per cent. to be charged on silver bills.

(This remedy is on an analogy to that in force in European countries, where if gold is wanted a higher rate is offered. India requires less silver, and adopts the reverse process and charges a premium on its imports.)

10. Similarly if the demand for gold bills on England shows signs of excess, and prices in India fall below their normal level, it will indicate that the currency is contracted, and requires correction, and a premium of 1 or more per cent. to be charged on gold bills.

(This would be equivalent to France levying a premium on the export of gold under similar circumstances.)

11. Similarly, if the balance of trade goes against India, and a run is made on the gold reserve in England, a premium of 1 or more per cent. to be charged on gold bills on England.

(The conditions of the balance of trade, and of the inflation or contraction of the currency are distinct. The balance of trade may be favourable, but this would be no indication that the currency was inflated, or contracted, or normal, but an adverse balance of trade is usually, though not necessarily, accompanied by an inflation of the currency, which is corrected by the issue of gold bills on England, and in such a case the premium should not be levied until the gold reserve in England is nearly exhausted.)

12. If the demand for silver bills in India show signs of excess,

and a premium is levied on their issue, and at the same time silver bullion in excessive quantities is tendered at the Mints, a further seigniorage of 1 or more per cent. to be charged on the coinage.

13. The entire amount realized by the import duty on silver, and by the seigniorage on silver taken to the Mints for coinage, to be added to the Gold Standard Reserve, till the total of that Reserve reaches 50,000,000*l.* sterling.

(France holds a gold reserve of over 100,000,000*l.* sterling, all in gold.)

REPORT *of the* CENSUS COMMITTEE, 1908-09.

In anticipation of the census of 1911, the Council re-appointed, in June, 1907, the Committee which had dealt with proposals regarding the censuses of 1891 and 1901. On this occasion, however, instead of limiting the scope of the reference to the United Kingdom, it was thought advisable to extend it to the consideration of a systematic enumeration of the whole Empire. The Committee was further charged to report whether any useful action, and if so, in what direction, can be taken by the Society to promote the improvement of the official statistics of this country.

The following members of the Council were nominated to serve on the Committee:—

- *The Right Hon. Sir Charles W. Dilke, Bart., M.P.*, President of the Society.
- *Mr. Arthur L. Bowley, M.A.*, Lecturer in Statistics, University of London.
- *Mr. Timothy A. Coghlan, I.S.O.*, Agent-General for New South Wales, and late Government Statistician.
- **Major P. G. Craigie, C.B.*, late Assistant Secretary, Board of Agriculture and Fisheries.
- *Dr. Reginald Dudfield*, Medical Officer of Health for Paddington.
- **Mr. Alfred W. Flux, M.A.*, Board of Trade.
- *Mr. Edgar J. Harper*, Statistical Officer to the London County Council.
- *Mr. Noel A. Humphreys, I.S.O.*, late Chief Clerk, General Register Office for England and Wales.
- **Mr. Bernard Mallet*, Commissioner of Inland Revenue.
- †*Sir Shirley Murphy, F.R.C.S.*, Principal Medical Officer to the London County Council.
- **Mr. R. H. Rew*, Assistant Secretary, Board of Agriculture and Fisheries.
- *Mr. G. Udny Yule*, Assistant Superintendent of the Department of Technology, City and Guilds of London Institute, Newmarch Lecturer in Statistics, University College, London.
- *Sir J. Athelstane Baines, C.S.I.*, late Census Commissioner of India (Chairman).

In their first Report, adopted by the Council in June, 1908, the Committee dealt with questions they considered urgent in connection with the preparatory work of the census of the United Kingdom. In their second Report, adopted on the 22nd of April, 1909, they put forward recommendations as to the form in which the final results of that census should be exhibited, together with their proposals regarding an organised enumeration of the Empire. They have also dealt with the question of a permanent Census Office and with the larger question last referred to them, their suggestions on which were approved by Council on the 13th May, 1909.

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* Added to the Committee, November, 1908.

† Resigned, June, 1908.

A.—United Kingdom. Part I.—Schedule, &c.

The Committee have considered questions connected with the enumeration in 1911 of the United Kingdom, and submit to the Council the following recommendations:—

(1.) PREPARATION.—(*a.*) In order to allow ample time for preparation, and to conduce to economy, it is essential that the Census Acts should become law not later than the spring of 1909.

(*b.*) Provision should be made therein for a General Census to be taken every ten years, the date and administrative details to be fixed from time to time by Order in Council.

(*c.*) Provision should be made for an enumeration by sex and age every five years.

(2.) SCHEDULE.—This should be uniform, and the Instructions as nearly uniform as may be possible, throughout the United Kingdom in respect to the main subjects upon which information is demanded, viz., Sex, Age, Relationship to Head of Household, Conjugal Condition, Occupation, Birthplace, and Infirmities. The inquiry as to room accommodation made in England should be extended to the rest of the Kingdom, under instructions suited to the respective countries.

The recommendation as to uniformity is not intended to exclude the adoption of special columns for local inquiries, such as that into Language in Wales, Scotland, and Ireland, or Instruction in the last-named country.

(3.) MARRIAGE.—(*a.*) In addition to the three "conditions" usually enumerated, that of Divorce should be recognised, in accordance with the practice of most other British and Continental countries.

(*b.*) Columns under this Head should be added for the duration of existing marriages and for the number of children born to those marriages. Interesting and useful information on these points has been collected in other countries.

(4.) RELIGIOUS DENOMINATION.—A column, the filling up of which may be left optional, should be added for this subject, in accordance with the practice in Ireland and Australasia. The Committee are of opinion that the information is likely to be of use in administrative as well as in social and vital statistics.

(5.) OCCUPATION.—Information on this subject should be shown in two columns, the entry as to Home Workers being inserted in the first; but the column for the position of the worker in his occupation should contain a few more subdivisions than in 1901, and the Committee recommend the use of letters to denote them.

(6.) BIRTHPLACE.—The entry of the county or town of birth is recommended throughout the Kingdom, in order that internal migration may be better localised than by the restriction of this detail to the single Census country. It is also desirable, in the case of British subjects born abroad, that they should be distinguished as British by Naturalisation and by Parentage.

(7.) INFIRMITIES.—While retaining the entry of the Blind and the Deaf and Dumb, the Committee are doubtful as to the value of the record of the mentally unsound. On the whole, however, they recommend the retention of the heading, but with the reinstatement of "imbecile or idiot" for "feeble-minded," the latter having not proved satisfactory in 1901. It is also recommended that a definition of Blindness should be given.

A draft of the schedule headings and instructions, in which the above recommendations are embodied, is hereto appended.*

ENUMERATORS.—The Committee do not consider it within their province to make suggestions as to the administrative details of the Census operations, except in so far as the latter immediately affect the statistical results. In this category comes the efficiency of the agents employed on the collection of the schedules, and the Committee feel bound to invite serious attention to the remarks upon this point recorded by the Treasury Committee of 1890. In a country where, as in England, Wales, and the greater part of Scotland, the schedule is filled in by the householder, the task of scrutinising, and, where necessary, of obtaining correction of errors in the entries, throws a responsibility upon the agent which it is impossible for him to fulfil without adequate training in the details of the operation. The Committee recognise that where so numerous a body of workers has to be temporarily engaged, the level of efficiency must be lower than that of the permanent official, and that the pay and time of employment have to be reduced to a minimum. They would suggest, however, that if the duty of copying out the schedules were to be abrogated, it would be practicable to allot more time to the scrutiny of the entries, for which one day does not suffice. They are of opinion, also, that the work of abstraction should be done from the original schedule. In the first place, the process of copying is conducive to error; and, again, those who have had experience of a card or slip system find that it is more accurate, cheaper, and more effective in the combination of the entries in different columns than the older methods of performing this process.

Part II.—Tabulation.

The recommendations of the Committee as to the form in which the results of the Census should be finally exhibited comprise the additions consequent upon their suggestions regarding the schedule made in their first report, together with such modifications of the tables of the last Census as they hold to be statistically desirable.

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* See Appendix I, p. 583.

The recommendations refer mainly to the summary tables, though, as the compilation has to proceed from the smallest unit prescribed, the details will be available for any locality recognised by the Census authorities. The Committee are desirous that it should be understood that, whilst regarding this subject from the standpoint of statistical value, they have refrained from urging the adoption of tabulation the cost of which would, in their opinion, be out of proportion to that value, or, again, which has not been effectively carried out at a census in other countries.

HOUSE-ROOM.—In regard to house-room, the record of which they have proposed to extend beyond the limit of the five rooms recognised in 1901, it seems to them desirable that the number of inhabitants of each tenement should be tabulated, persons under ten years old being separately given. The return is admittedly but a very imperfect record of the density of habitation, but the addition suggested is a step in advance.

AGES.—It is recommended that the ages of the entire population should be tabulated, by sex, in annual periods, exactly as returned, as was done in 1901 for selected districts only. This is now the general practice at a Census, and enables the investigator to group and correct the items as may suit the purpose in hand.

CONJUGAL CONDITION.—If the proposals of the Committee, in regard to the recognition of divorced as a separate "conjugal condition," be adopted, it will be obviously necessary to add this heading to the tables relating to this subject. An additional table will be needed for the exhibition of the results of the inquiry as to the number of children to the existing marriage, also suggested in the draft schedule; and the Committee think that this information should be combined with the age of the mother and the duration of the marriage, as was done at the Australian censuses of 1901. In this case a separate card or slip would be necessary.

RELIGION.—If a column for religion be adopted in the schedule the results would be sufficiently exhibited in a table giving the several denominations, as returned, by sex, with distinction of those under 15 years old, with separate entry of those who do not enter their religion.

OCCUPATION.—In the general table of occupations used in 1901 additional columns will be required, if the proposals of the Committee be adopted, for the entry under each occupation of "A"—those assisting relatives, and "N"—those temporarily out of work. In consideration, too, of the adoption of the age-period 15—18 in the Factory Acts, the Committee recommend that this period should be recognised in the table in question.

In consideration of the intimation of the Registrar-General that he is preparing to obtain special information regarding the occupations of women at the time of their death, for the years 1910, 1911 and 1912, the Committee recommend that in the General Census Table the widowed should either be separately shown, or if combined with other conditions, should be included with the unmarried.

It has been strongly urged upon the Committee that the return of the number of those *dependent* upon each occupation or means of subsistence should be obtained through the Census, in addition to the number of the actual *workers* or *proprietors*, and the Committee have no doubt as to the economical value of such information. They are of opinion, however, that the distinction between independent and contributory earnings would be so largely obscured in the Census record that the numbers shown as dependent upon the occupation of the head of the household would infallibly be exaggerated, and for this reason they feel themselves unable to support the proposal.

In regard to a further suggestion made to them—that the number of domestic servants employed in each household should be tabulated in combination with that of the members of the household, as was done for London by Mr. Charles Booth, and in New South Wales in 1901, the Committee, whilst recognising the value of the result, do not consider it to hold rank with the primary objects of a general census. They think, however, that, in the event of a permanent census office being established, this information might usefully be worked up after the principal tables have been issued.

The Committee earnestly hope that, whatever classification of occupation be adopted in the United Kingdom, it will be such as may suit the other British States in the event of an Imperial compilation. They consider that the adaptability of the return would be complete if the general alphabetical index, Table XXXVI of the summary series of 1901, were to be expanded so as to include every item found in the schedules, with the order, sub-order, *and group* on one side of the page, and, on the other, the number of persons recorded against it, with distinction of sex. The basis of such an index exists in the "Office-Index" of the Registrar-General, and a table such as the Committee suggests is found amongst the Australian returns of 1901.

Part III.—A Permanent Census Office.

The advantages of a permanent establishment to deal with work connected with the Census were set forth in the Report of the Census Committee of the Council, dated 9th November, 1888. In the Report of the Treasury Committee of 1890, they occupied a prominent place among the recommendations. In 1894, again, the question was brought before the then President of the Local Government Board, both in a memorial presented by the Council, and subsequently by the deputation received by him on the subject. On the occasion of another deputation to the same Department, in May, 1904, in connection with a quinquennial Census, special stress was laid upon the fact that a permanent staff, whilst highly desirable in any case, was essential if the enumeration of population were to be undertaken at an interval shorter than that of ten years. On all the above occasions the authorities showed themselves entirely in accord with the views put forward by this Society, but were equally consistent in abstaining, on financial grounds, from taking steps to give effect to them.

The Committee, however, express their profound conviction that without addition to the statistical equipment of the State, the continually increasing demand for statistical information in almost every Department of administration, cannot be adequately met; whilst, in regard to the Census figures, which form the basis of the more important deductions upon the social conditions of the community, this country will tend to fall more and more behind others in the trustworthiness of the *data* upon which alone reliance has to be placed. The Committee would also point out that, in their reports on this subject on previous occasions, they assume that the establishment recommended would be part of that of the Registrar-General of England and Wales, and would be mainly occupied with the Census work of those parts of the United Kingdom. At the same time, it was suggested in 1888 that its duties should include the promotion of such uniformity as is practicable in taking the Census of different parts of the Empire, and the preparation of reports on the results. To this last object the Committee refer below. They would here suggest that to secure uniformity of results within the United Kingdom would be one of the principal advantages of a permanent office, the constitution of which accordingly would have to be framed on a wider basis than that formerly proposed. They do not desire to deal with this point otherwise than in outline, and would therefore limit themselves to the expression of the opinion that, assuming their previous recommendations to be adopted, and the Census Acts to be in permanent operation, a permanent Census office should be established under the Treasury. The object might be attained by establishing a Census Commission for the United Kingdom, to consist of the Registrars-General of England and Wales, Scotland, and Ireland, who would be responsible for conducting the decennial and quinquennial Census, as suggested by this Committee.

Whether this Census scheme be adopted or postponed, the Committee are of opinion that, in consideration of the close relations between the statistics of population and those of other social factors, it would be highly advantageous that a consultative Committee should be appointed, composed of the Statistical officers of the Departments dealing with finance, industries, trade, pauperism, education, and similar subjects.

The creation of such a body would, in the opinion of the Committee, effect a material advance in the direction of the coordination, simplification, and improvement of official and Parliamentary statistics.

B.—Imperial Census.

The enumeration of the population of the whole Empire upon a given date is impracticable, owing to differences in climate, industries and customs; nor is it of as much importance as the preservation of the same interval between local enumerations as has been hitherto customary. In the case of most British States the census has been taken on dates varying but by a month or two from that adopted in the United Kingdom. It is desirable, however, that the States of South Africa, where change has probably been considerable since 1904, should bring their operations into line with those of other parts of the Empire; and, also, that the census should not be again allowed to lapse in those West Indian colonies where none was taken in 1901.

The Committee recognise, too, that uniformity in the schedule or scope of the inquiry made through the census is no more attainable or necessary than in the actual date of the enumeration. It is essential, however, to the success of an Imperial operation of this description that in regard to certain definite statistical facts there should be general agreement upon the basis on which those facts are recorded and the form in which they should be exhibited for the purposes of combination and comparison. Alongside of these subjects, it is open to each State to find place for such additional information and detail as may be suggested by the administrative requirements of the locality. Upon consideration of the various proposals regarding international comparison of census figures which have been laid before the International Statistical Institute in recent years, the Committee are of opinion that the subjects to which Imperial comparison can be most usefully directed are—(1) SEX; (2) AGE; (3) CONJUGAL CONDITION; (4) BIRTHPLACE; and (5) OCCUPATION. In dealing with each of these, it is essential that the distinction between the white or European race and others should be maintained throughout the tabulation, first, in consideration of the great physical and social differences between the former and coloured races, and, again, in order to exhibit the effects upon the former of variation in local circumstances. The extent to which statistical discrimination should be carried in the case of indigenous coloured communities is a question for the authorities of the respective States to determine, and the same remark applies to the comparatively few cases where there is a considerable immigrant population of coloured race, as, for instance, in Natal, Fiji, the Straits Settlements, and some of the West Indian colonies. In several of the last-named, moreover, the distinction between white and coloured inhabitants has disappeared from recent enumerations, but it might, perhaps, be restored if it were to be made perfectly clear that the return is strictly confidential, and that in the published results of the enumeration it is impossible to identify families or individuals.

The experience of past enumerations shows that throughout the greater part of the Empire it is not difficult to collect the information under the heads above-mentioned in the same detail as in the

United Kingdom. In the less advanced tracts, however, the inquiry will probably be considerably simplified in regard to age, conjugal condition and occupation, if, indeed, the two last be included in the census at all. As regards age, a return by years is usually out of the question in illiterate communities, and the utmost that can be expected with hope of success is the recognition of such conventional distinctions as those of "infant," "child," "full-grown" and "aged."

Setting on one side these exceptional cases, the Committee are of opinion that from a schedule, the skeleton of which consists of the five subjects above specified, with the addition of a column for Race, a useful series of Imperial tables may be compiled in something of the detail set forth below :—

I. The population actually present collated with the figures of two preceding censuses and the area.

II. Throughout the series, SEX and RACE should be distinguished.

III. The AGES in completed years should be tabulated (*a*) in annual periods as returned, (*b*) grouped quinquennially to 70, (*c*) in typical groups, such as 0—4, 5—14, 15—44, 45—59, 60 and over, or in different groups in the two sexes.

IV. CONJUGAL CONDITION should include the married, never-married, widowed, and, where recorded, the divorced. In the case of a white population, the tabulation of the conditions by age may begin from the age of 15, proceeding in quinquennial periods to 30 or 35, and onwards in decades to 65 or 70. Where, as amongst Brahmanists and Chinese, betrothal before puberty constitutes marriage, the tabulation must start from birth. It would be useful, also, if the married white population were tabulated with the ages of husband and wife in combination.

V. BIRTHPLACE may be dealt with in this series in general groups, such as (*a*) the State or Colony of enumeration, (*b*) adjacent territory, distinguishing British from foreign, (*c*) other countries, specifying each, with distinction of British from others. The local return will provide full detail under sections (*a*) and (*b*).

VI. OCCUPATIONS can only be returned in so extensive and complicated a form that classification for general use must proceed upon very broad and comprehensive lines. If, however, the proposals made by the Committee, respecting the treatment of this subject in the United Kingdom, be generally adopted, the detailed alphabetical index therein suggested would facilitate the classification of the whole mass of *data* upon a uniform system, provided that the basis of the record is identical throughout.

In addition to the subjects of primary statistical importance which can be studied only in the results of a census, there are others which find place in many, if not most, inquiries of this sort, but which, in the opinion of the Committee, occupy but a secondary position in an Imperial scheme, either because information regarding them can be obtained by other means, or, in consideration of the inaccuracy or incompleteness of a return, procured through the rough-and-ready method of a general census; or, again, because of the difficulty in framing the inquiry upon exactly similar lines under greatly varying conditions. Amongst these may be mentioned

EDUCATION, which practically means the distinction between the illiterate and the rest; certain specified INFIRMITIES, on the definition of some of which even expert opinion is divided; and RELIGIOUS DENOMINATION, the administrative value of which, and its bearing upon vital statistics, is often well worth taking into account. Upon the whole, therefore, the Committee refrain from including any of these in their general recommendations.

In illustration of the suggestions put forward above, the Committee append a brief description of the Series of Tables which they consider will adequately exhibit the figures to which they attach most importance in the statistical comparison of one part of the Empire with another. They feel bound, however, to remind the authorities to whom their recommendations may be submitted that the figures themselves constitute no more than the basis of that comparison. The co-ordination which converts them into statistical results is not limited to the mere transfer of the figures from their absolute to their proportional form, and the recapitulation of the latter in the text of a Report, but implies analysis and explanation of differences which are made possible only by study of the commentary on the local statistics by the respective State authorities, a task which can be accomplished by experts devoting their whole time and attention to it, but is beyond the capacity of a staff not specially cognisant of the subject, and already fully occupied with current duties. It could, no doubt, be fitly and efficiently performed by members of a permanent statistical body trained for census work, such as is recommended in Part III above.

On behalf of the Committee,
J. A. BAINES,
Chairman.

13*th May*, 1909.

APPENDIX I.—*United Kingdom. Draft Occupier's Schedule.*

1	NAME AND SURNAME	This Schedule must include every Person dwelling in this Tenement on the Night of the ...., and alive at Midnight; also every person arriving on the Morning of Monday, the ...., who has not been enumerated elsewhere. No one else must be included. Write first the Name of the Head of the Family, followed by the Names of his Wife, Children, and other Relatives; then those of any Visitors, Servants, Boarders.
2	SEX	Write in this Column, **M** for Males, and **F** for Females.
3	AGE LAST BIRTHDAY...	If the Age be Less than One Year, put **X** in this Column.
4	RELATION TO HEAD OF FAMILY	State whether Head, Wife, Son, Daughter, or other Relative, Visitor, Boarder, or Servant.
5	MARRIAGE	If a Person is Married write **M** in this Column; if Never Married, write **NM**; if Widowed, write **W**; if Divorced, write **D**.
6	MARRIAGE-DATE ...	Opposite the Name of each Person Entered as Married in Column 5:— Write here the Date or Year of the Existing Marriage.
7	CHILDREN...	Write here the Number of Children Born to the Existing Marriage, whether now Living or not.
8	RELIGION	Do not use general terms, such as Protestant, Catholic, &c., but write the special Body, as *Church of England*, *Roman Catholic*, *Wesleyan*, &c. Write against Children the Religion in which it is intended to bring them up. If anyone objects to fill in this column, the word "Object" should be written.
9	OCCUPATION OR MEANS OF LIVELIHOOD	Before filling in this column, read carefully the instructions on the back of this Schedule. Write here the Occupation or means of livelihood of each person, man, woman, or child. If out of work, write the usual occupation. Those engaged in any trade or industry should state the particular branch, and also the material worked or dealt in, and if working at home, add **At home.** A person engaged in more than one pursuit should state all of them in the order of their importance to his livelihood.
10		If a Person employ others besides Domestic Servants, write **E** in this column against the name. If working on own account, but not employing others, write **O**. If working for an employer, write **W**. If a relative assisting the head of the family, but not receiving wages, write **A**. If out of work for more than a week before the Census, write **N**. All children under instruction should be here put down as "Scholars."
11	WHERE BORN	If born in the United Kingdom, write the County or Town. If born in any other British Possession, write the Name of that Possession. If born in a Foreign Country, write the Country. If born at sea, write "At Sea." Persons born in a Foreign Country or at Sea to write *British*, if British Subjects, adding the letter **N** if British by Naturalisation.
12	INFIRMITIES	1. Blind. 2. Deaf and Dumb. 3. Lunatic. 4. Imbecile or Idiot. Enter as Blind only persons totally unable to see; and as Deaf and Dumb only those who are Dumb as well as Deaf.
	Write here the number of living rooms and sleeping rooms occupied by the above persons. ☐	[*To be inserted at the foot of Column I.*]

APPENDIX I.—*United Kingdom. Draft Occupier's Schedule—Contd.*

Instructions for filling up Columns 9 and 10, headed "Occupation or Means of Livelihood." (To be printed on back of Schedule.)

1. Vague terms, such as Merchant, Broker, Agent, Manufacturer, Contractor, Manager, Superintendent, Foreman, Dealer, Apprentice, Artisan, Mechanic, Machinist, Machine Worker, Factory Hand, Operative, Labourer, &c., must not be used alone. Full and distinctive description of the occupation must be given.

2. Justices of the Peace and Members of Parliament may state their title, but should not omit to return their profession or ordinary means of livelihood.

3. In the case of children attending school, and also engaged in a trade or industry, that trade or industry should be stated in Column 9, and "Scholar" written in Column 10.

[*Instructions* 4 *to* 18 *are with a few slight alterations those used in the Census of* 1901.]

APPENDIX II.—*Descriptive Note on the proposed Imperial Tables.*

GENERAL.—The names of the States, Colonies, &c., should, as a rule, run down the first column of the Table, though this is not practicable in all cases. The order of entry should be that adopted in the compilation of 1901, by Continents. For the Summary series of Tables, it will be sufficient to distinguish only the principal countries, subordinate to a Continental total, grouping the smaller units so as to bring the whole into about sixteen sub-Continental heads.

At the foot of each Table the WHOLE population dealt with should be accounted for, and if the detail of the Table be not available for any area, the population in question should be separately added, in order that the same grand total may appear throughout the Series.

If the proposals regarding the discrimination of Race be adopted, a separate series of Tables, supplementary to the main scheme, will be required for the White population so far as Age, Conjugal Condition, and Birthplace are concerned.

TABLE I (*Area and population*).—The States being entered in column 1, the area in square miles will come in column 2. Sex detail and the total population at the census concerned will occupy columns 3, 4, and 5. In columns 6 and 11 the corresponding figures for the two preceding enumerations should be entered. As the three sets of figures are to be comparable with each other and with the area, differences in the scope of the census at various dates will have to be noted by subordinate figures for area and population.

TABLE II (*Population distributed by cities, towns, and other aggregates*).—There is no numerical line of demarcation between urban and rural population which is universally applicable. The comparison, accordingly, between different States must be made by groups arbitrarily defined. In this Table it is desirable to show, for each group, the number of units falling within it in each State, with their aggregate population at the two last enumerations. The groups suggested are places with a population of 500,000, 200,000, 100,000, 50,000, 30,000, 20,000, 10,000, 5,000, 1,000, and under 1,000. In columns 2, 3, and 4 the grand total of places and population should be given.

TABLE II (*a*) should give, in order of population, the cities and towns having a population above, say, 20,000, the State being added in the second column, and the population for the two censuses in columns 3 and 4.

TABLE III.—The AGES, by annual periods, will have to be given in column 1, and the States, sub-divided for sex, in the headings. It will be convenient to total each five-yearly group in distinctive type. For a Summary Table the States can be given down the first column as usual, and the headings assigned to the 15 quinquennial periods, with columns for those not returning age, and the grand total of all ages. A similar form may be adopted for any wider grouping which may be required.

TABLE IV.—CONJUGAL CONDITION, under the heads of Single, Married, Widowed, Divorced, and Not Returned, with their total at each of ten age-periods, necessitates sixty entries for each State, for each sex. The form, therefore, must be long and complicated. The form most convenient for totalling by Continents, and for the Empire as a whole, is that in which the States occupy the first column, and the age-period the main heading, the four Conditions and the Not Returned, with the total, occupying the sub-heading, each column being sub-divided for sex. This form, however, spreads over several pages; but if the totals be cast separately the Table can be materially shortened by bracketing the sex entries against each State in distinctive type. The Table in which the ages of husband and wife are shown in combination need not be compiled into a general Table, but can be used for intercomparison of State totals only.

TABLE V.—BIRTHPLACE will be shown in two aspects. First, the actual distribution, in which the birthplaces are entered down the first column, in classified Continental order of States and countries, with the enumerating States, sub-divided for sex, in the headings; the grand total preceding them.

TABLE V (*a*) will then give the basis of intercomparison in respect to migration, &c., by showing the States down the first column, and the Birthplaces in the heading, grouped as follows:—A. Born in the State or Colony. B. Born in adjacent territory, shown as respectively British and Foreign. C. Born in non-adjacent countries, similarly sub-divided. Sex should be given under each main and sub-heading, with the population not-returned and the grand total, separately.

TABLE VI. OCCUPATION.—The Committee do not think it worth while to frame any general Table for Occupation until the extent to which uniformity or comparability of the data can be secured has been ascertained.

TABLE VII. RACE.—The same remark applies to the tabulation of Race, except in regard to the distinction between the White races and the rest.

APPENDIX III.—*Draft of the Proposed Imperial Tables.*

TABLE I.—*Area and Population.*

State, Colony, &c.	Area in Square Miles.	Population in								
		1911.			1901.			1891.		
		TOTAL.	Males.	Females.	TOTAL.	Males.	Females.	TOTAL.	Males.	Females.
1	2	3	4	5	6	7	8	9	10	11

TABLE II.—*Distribution of Population by Cities, Towns and Villages, &c.*

State, Colony, &c.	TOTAL.			Places having a Population of								
				500,000 and Upwards.			200,000—			100,000—		
	Number of Places	Population.		Number.	Population.		Number.	Population.		Number.	Population.	
		1911.	1901.		1911.	1901.		1911.	1901.		1911.	1901.
1	2	3	4	5	6	7	8	9	10	11	12	13

TABLE II.—*Distribution of Population by Cities, &c.—Continued.*

State, Colony, &c.	Places having a Population of											
	50,000—			30,000—			20,000—			10,000—		
	Number.	Population.		Number.	Population.		Number.	Population.		Number.	Population.	
		1911.	1901.		1911.	1901.		1911.	1901.		1911.	1901.
1	14	15	16	17	18	19	20	21	22	23	24	25

TABLE II.—*Distribution of Population by Cities, &c.—Concluded.*

State, Colony, &c.	Places having a Population of								
	5,000—			1,000—			Under 1,000.		
	Number.	Population.		Number.	Population.		Number.	Population.	
		1911.	1901.		1911.	1901.		1911.	1901.
1	26	27	28	29	30	31	32	33	34

TABLE IIA.—*Chief Cities and Towns to Population.*

City or Town (grouped under the headings of Table II).	State, Colony, &c.	Population.					
		1911.			1901.		
		TOTAL.	Males.	Females.	TOTAL.	Males.	Females.
1	2	3	4	5	6	7	8
(1) 500,000 and upwards—							
City A							
,, B							
,, C							
&c.							
(2) 200,000—							
City D							
,, E							
,, F							
&c.							
Down to (6) 20,000							

APPENDIX III—*Contd.*—TABLE III.—*Distribution of the Population by Age.*

Age.	Grand Total.		State A.		State B.		State C.		State D.		State E, &c.	
	Males.	Females	Males.	Females	Males.	Females	Males.	Females	Males.	Females	Males.	Females.
1	2	3	4	5	6	7	8	9	10	11	12	13
Under 1												
1												
2												
3												
4												
Total, under 5												
5												
6												
&c.*												
Total, returning age												
Not returning age												
Total population												

* To end of age-return.

TABLE IIIA.—*Summary of Ages, in Groups.*

State, Colony, &c.	Total Returning Ages.		Under 5.		5—10.		10—15.		15—20.		20—25.	
	Males.	Females.	Males.	Females	Males.	Females.	Males.	Females	Males.	Females.	Males.	Females.
1	2	3	4	5	6	7	8	9	10	11	12	13

TABLE IIIA.—*Summary of Ages, in Groups—Continued.*

State, Colony, &c.	25—30.		30—35.		35—40.		40—45.		45—50.		50—55.	
	Males.	Females	Males.	Females	Males.	Females	Males.	Females.	Males.	Females.	Males.	Females.
1	14	15	16	17	18	19	20	21	22	23	24	25

TABLE IIIA.—*Summary of Ages, in Groups—Concluded.*

State, Colony, &c.	55—60.		60—65.		65—70.		70—75.		75—80.		80 and Over.*		Not returned.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1	26	27	28	29	30	31	32	33	34	35	36	37	38	39

* Special columns may be interpolated for larger groups, as, for instance, under 15, 15 to 45, 45 to 60, 60 and over, as required for special comparison.

APPENDIX III—*Contd.*—TABLE IV.—*Distribution by Conjugal Condition.*

State, Colony, &c., and Sex.	Total, All Ages.						Under 15.					
	Single.	Married.	Widowed	Divorced	Not Stated	Total.	Single	Married.	Widowed	Divorced	Not Stated	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13
State A Males...												
State A Females												
State B Males...												
State B Females												
&c.												

TABLE IV.—*Distribution by Conjugal Condition—Continued.*

State, Colony, &c., and Sex.	15—20.						20—25.					
	Single.	Married.	Widowed	Divorced	Not Stated	Total.	Single.	Married.	Widowed	Divorced	Not Stated	Total.
1	14	15	16	17	18	19	20	21	22	23	24	25

TABLE IV.—*Distribution by Conjugal Condition—Continued.*

State, Colony, &c., and Sex.	25—35.						35—45.					
	Single.	Married.	Widowed	Divorced	Not Stated	Total.	Single.	Married.	Widowed	Divorced	Not Stated	Total.
1	26	27	28	29	30	31	32	33	34	35	36	37

TABLE IV.—*Distribution by Conjugal Condition—Continued.*

State, Colony, &c., and Sex.	45—55.						55—65.					
	Single.	Married.	Widowed	Divorced	Not Stated	Total.	Single.	Married.	Widowed	Divorced	Not Stated	Total.
1	38	39	40	41	42	43	44	45	46	47	48	49

TABLE IV.—*Distribution by Conjugal Condition—Concluded.*

State, Colony, &c., and Sex.	65 and Upwards.						Age Not Stated.					
	Single.	Married.	Widowed	Divorced	Not Stated	Total.	Single.	Married.	Widowed	Divorced	Not Stated	Total.
1	50	51	52	53	54	55	56	57	58	59	60	61

APPENDIX III—*Contd.*—TABLE V.—*Distribution of Population by Birthplace.*

Birthplace.*	Total Population.		State, Colony, &c., where Enumerated.							
			State A.		State B.		State C.		State D.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
1	2	3	4	5	6	7	8	9	10	11

TABLE V.—*Distribution of Population by Birthplace—Concluded.*

Birthplace.*	State, Colony, &c., where Enumerated.									
	State E.		State F.		State G.		State H, &c.		Not Returning Birthplace.	
	Males.	Females.	Males.	Females.	Males.	Females	Males.	Females.	Males.	Females.
1	12	13	14	15	16	17	18	19	20	21

* Countries and States arranged by Continents.

TABLE VA.—*Summary of Birthplace.*

State, Colony, &c., where Enumerated.	A. Born in the State, &c., where Enumerated.		B. Born in Adjacent Territory.					
			British.		Foreign.		Total.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
1	2	3	4	5	6	7	8	9

TABLE VA.—*Summary of Birthplace—Concluded.*

State, Colony, &c., where Enumerated.	C. Born in Non-adjacent Territory.						Total.					
	British.		Foreign.		Total.		British.		Foreign.		Total.	
	Males.	Females	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
1	10	11	12	13	14	15	16	17	18	19	20	21

APPENDIX IV.—(*a.*) *Copy of letter addressed to the President of the Local Government Board, the Secretary for Scotland, and the Chief Secretary for Ireland.*

"ROYAL STATISTICAL SOCIETY,
9, Adelphi Terrace,
Strand, London, W.C.

17*th July*, 1908.

"SIR,—The periodical enumeration of the population of these islands and of other British possessions is a subject in which this Society has long taken a very keen interest, and it has been the practice of the Council, in anticipation of each Census, to appoint a Committee of its members to report upon matters relating to the statistical scope and accuracy of the operation. On the present occasion, this Committee is thus composed. [The names follow as above, see p. 574.]

"The Council most heartily endorse the Committee's recommendation that, so far as the United Kingdom is concerned, an Act should be passed giving the Census the status of a permanent institution, and prescribing at the end of every five years an enumeration alternately comprehensive (including, that is, the full detail statutorily determined) and restricted (that is, including only the facts of sex and age). This recommendation was made by the Society in 1888, and adopted by the Treasury Committee of 1890 (Cd–6071). In regard to the quinquennial enumeration, the arguments pressed upon the Government on previous occasions, the most recent being in 1904, gain strength with the growth of the population and its increasing mobility. The need of a permanent provision for the Census is based upon considerations of both economy and the more efficient conduct and supervision of the complicated preparations which are necessary, and, as urged on previous occasions, involves the maintenance of a small permanent Census establishment.

"In any case, the Council earnestly hope that the Census Act or Acts may be passed not later than the spring of 1909, in order that a portion of the expenditure sanctioned may be available for preliminaries earlier than the eight or nine months before the Census allowed on previous occasions.

"I am, Sir,
Your obedient servant,
R. H. REW,
Hon. Secretary."

(*b.*) *Copy of reply from the Local Government Board to foregoing.*

88,245. C. 1908.

"LOCAL GOVERNMENT BOARD,
Whitehall, S.W.

15*th August*, 1908.

"SIR,—I am directed by the Local Government Board to advert to your letter of the 17th ultimo relative to the establishment of a permanent Census Establishment, and to state that the representations of the Royal Statistical Society will have consideration.

"I am to add that the Board have forwarded a copy of your letter to the Registrar-General.

"I am, Sir,
Your obedient servant,
(Signed) H. MONRO,
Assistant Secretary.

"R. H. Rew, Esq.,
The Hon. Secretary to the
Royal Statistical Society."

(*c.*) *Copy of further letter in reference to foregoing.*

"ROYAL STATISTICAL SOCIETY,
9, Adelphi Terrace,
Strand, London, W.C.

4*th December*, 1908.

"SIR,—I have the honour to inform you that the Council have had before them Mr. Monro's letter, 88,245 C. 1908, of the 15th August last, and I am desired to draw your attention to the fact that it refers to my letter of the 17th July as 'relative to the establishment of a permanent Census Establishment.'

"I am desired accordingly to point out that the recommendations which the Council of this Society desired to press most urgently upon your attention were: (*a*) a quinquennial enumeration; (*b*) a *Standing* Census *Act*, to avoid the trouble and delay of fresh legislation for each Census; and (*c*) the early passing of the Bill for the Census of 1911. The provision of a permanent Census *Establishment* is referred to incidentally in the letter in question as being necessarily entailed by the prescription of a quinquennial enumeration. It will be more specifically brought to your notice in a later communication from the Council.

"2. As the Census Act prescribes the contents of the Schedule, the Council considers it advisable to take this opportunity of placing before you the conclusions of its Census Committee as to the information it is desirable to obtain through a decennial Census. These are embodied in the Report hereto appended. The Committee is fully aware of the objections which have been and may be raised by not inconsiderable sections of popular opinion to one or two of its proposals, but the recommendations are made from the standpoint of statistical improvement in directions which wide experience in the administration of Census operations has proved to be not unattainable.

"3. In connection with another provision in the Census Act, the Committee suggest that as regards the "Copying of the Schedules," prescribed in Cl. 5 of Act, 63 Vic., cap. 4, a discretion should be left to the Registrar-General, in case they find reason to adopt a different system of conducting the abstraction.

"I have the honour to be, Sir,
Your obedient servant.
(Signed) R. H. Rew,
Hon. Secretary.

"The Right Hon. John Burns, M.P.,
Local Government Board,
Whitehall, S.W."

(*d.*) *Copy of letter addressed to the President of the Local Government Board, the Secretary for Scotland, and the Chief Secretary for Ireland, to accompany copy of the Committee's Report.*

"Royal Statistical Society,
9, Adelphi Terrace,
Strand, London, W.C.

26*th May*, 1909.

"Sir,—In continuation of my letters of the 17th July and of the 4th December, 1908, I am instructed by the Council of this Society to forward to you herewith the proceedings of the Census Committee, containing suggestions regarding the Tabulation of the results of the Census, a permanent Census Office, and the Census of the Empire.

"The Council, which has adopted these suggestions, desires me to express its hope that such of the proposals as relate to matters within the cognisance of your Department will receive your favourable consideration.

"I have the honour to be, Sir,
Your obedient servant,
(Signed) R. H. Rew,
Hon. Secretary."

(*e.*) *Copy of letter addressed to the Secretaries of State for India and the Colonies, respectively, to accompany copy of the Committee's Report.*

"Royal Statistical Society,
9, Adelphi Terrace,
Strand, London, W.C.

26*th May*, 1909.

"Sir,—I am instructed by the Council of this Society to forward herewith copies of the Reports of the Committee appointed to consider questions connected with the next decennial Census. On this occasion the reference has been extended to include the possibility of effecting an enumeration of the whole Empire upon some definite and pre-arranged plan; and I am desired to bring specially to your notice the suggestions of the Committee regarding the subject, and to express a hope that they will receive the attention of those in a position to give effect to such propositions.

"I am to add, on behalf of the Committee, that, as they recognise very fully the difficulties and complexity of the undertaking in question, they will be glad to depute one or more of their number to confer with the authorities in charge of statistical matters in your Department, in order to be able to give explanations of points included in their recommendations, and also to receive information as to considerations which through ignorance of local circumstances they may have omitted to take into account.

"I have the honour to be, Sir,
Your obedient servant,
(Signed) R. H. Rew,
Hon. Secretary."

MISCELLANEA.

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I.—*The International Statistical Institute at Paris.*

The twelfth Congress of the International Statistical Institute opened at Paris on the 4th and closed on the 10th July. It may indeed be said to have been informally opened on the evening of the 3rd, when M. Levasseur received the members of the Institute at the College of France, and from that time until late on the evening of the 10th, when the *dîner d'adieu* concluded with a dance, those who conscientiously adhered to the programme had but little interval for repose. The genius of the French for taking their labours gaily pervaded the arrangements, while our hosts' estimate of the capacity of their guests, for both work and recreation, assumed that Gallic energy was an attribute of all nations. So lavish was the hospitality and so cordial the welcome which Paris gave the Institute, that at the end of a strenuous octave the predominant impression was one of appreciation of the splendour of our entertainment and the warmth of our reception. Only on reflection we realised that business and pleasure had been so deftly blended that we had accomplished a maximum of both.

The Congress met under the shadow of the loss of its President, Dr. Von Inama-Sternegg, whose invaluable services to the Institute have already been recognised in the pages of this *Journal.** The absence of the Treasurer, Sir Alfred Bateman, was also a cause of sadness, and its reason was deeply regretted, especially by those who recalled the kindly interest which Lady Bateman took in the reception of the Institute in London. It was pleasant to find that many of our foreign colleagues had agreeable recollections of the Congress in 1905, and many were the sympathetic allusions, not only to the death of Lady Bateman, but also to the loss sustained by the Institute in the death of Mr. Hendriks, who had been for many years one of the auditors of the accounts, and was well known personally to the majority of the members. The duties of Presidency devolved upon the three Vice-Presidents, MM. Levasseur, Lexis and Troinitsky. On M. Levasseur as senior Vice-President, as Chairman of the Committee of Organisation, as Administrator of the College of France, and also, in his individual capacity as a distinguished Frenchman, fell the lion's share of the work. He discharged it with truly leonine energy. One may say, indeed, that 1909 will be known in the annals of the Institute as "M. Levasseur's year." Whether he was presiding at the General Assembly, expounding statistics in a section, lecturing to the Paris Statistical Society, proposing or responding to a toast at one of the dinners, or acting as host at the College of France, his brilliant eloquence, his fascinating vivacity, his tireless energy were unfailing and inexhaustible. Under the spell of his vivid personality the members present would have acclaimed him as the successor to Dr. Inama-Sternegg in the Presidential chair, but when at the General Assembly on the last day the time came to fill the vacancy, and Dr. von Mayr, with general assent, solicited M. Levasseur to accept the Presidency, he declined the position on the plea (incredible as it would be but for the inexorable record of time) of advancing years. Statistics, as the stale gibe has it, may prove anything, but they cannot prove M. Levasseur to be old, even although it is admitted that he was born in 1828. Happily, however, the Institute was able to secure the services of another veteran whom it delighted to honour, and M. Luigi Bodio, for many years General Secretary, was unanimously elected President. The three Vice-Presidents were re-elected, as also was the General Secretary, M. Verrijn Stuart. Sir Alfred Bateman having resigned the Treasurership, which he had held since 1897, Major Craigie was elected in his place. To complete the record of changes in *personnel* it may be added that M. de Foville was again elected as one of the two Auditors (*commissaires-vérificateurs*), and that Mr. Rew was elected as successor to Mr. Hendriks.

The number of members of the Institute attending the Congress was 82, being just equal to the number at Berlin in 1903. The number of persons officially invited was 70, making a total of 152 taking part in the Congress, without reckoning the ladies. There were 54 official delegates from the various governments of whom 31 were members of the Institute and 23 were "invited." The Institute naturally welcomes to its Congress any person officially accredited by his Government, but it is somewhat of an anomaly that nations should appoint as their representatives persons who, not being members of the Institute, cannot of course exercise voting powers at the meetings. In all 24 countries were represented at the Congress. From the British Empire the following attended, official delegates being distinguished by an asterisk.

Great Britain.—Sir Athelstane Baines, Mr. A. L. Bowley, Major Craigie,* Dr. Dudfield, Professor Edgeworth, Mr. R. H. Rew,* Mr. G. Udny Yule.

Australia.—Mr. G. H. Knibbs.*

New South Wales.—Mr. T. A. Coghlan.*

All of these, with the exception of Mr. Knibbs, are members of the Institute.

The business of the Congress opened with a general assembly in the Amphitheatre of the Sorbonne on the 4th July, under the presidency of the Minister of Labour, M. René Viviani, who welcomed the Institute in the name of the French Government. He referred to the previous meeting of the Institute in Paris, in 1889, and made sympathetic allusion to the death of Dr. Inama-Sternegg. He insisted on the dependence of legislation and administration on statistics and pointed out that social facts demanding the intervention of the State were often revealed in the first instance by the researches of statisticians. M. Levasseur, as senior Vice-President, thanked the Minister on behalf of the Institute. In the course of an interesting address he referred especially to the inroads made by death in the membership of the Institute since the previous Congress. The obituary comprised Dr. von Inama-Sternegg, Mr. Carroll D. Wright, Professor Kauss, Mr. Hendriks and Mr. Wilson Fox. I quote his references to our two lamented colleagues of this Society.

> Frédéric Hendriks était un vétéran de nos réunions. Je l'avais connu jadis dans le Congrès International de Statistique; il m'y avait même précédé. Il était actuaire et il avait été vice-président de la Société Royale de Statistique de Londres. Aux sessions de l'Institut International il a été un des plus assidus; il se trouvait encore à celle de Copenhague. Mais on ne saurait rester indéfiniment le vétéran d'une nombreuse compagnie: Hendriks nous a quitté au mois de mars dernier, à l'âge de quatre-vingt-deux ans.
>
> Arthur Wilson Fox était, au contraire, un des jeunes: il n'avait pas atteint la cinquantaine. Mais chez lui l'activité avait compensé le nombre des années. Entré au Board of Trade en 1897, sous l'administration de Sir Alfred Bateman, comme commissaire assistant, il était devenu Contrôleur-général du Commerce, du Travail et de la Statistique. En 1903, la Société Royale de Statistique de Londres a entendu de lui une intéressante communication sur le salaire agricole en Angleterre. Sa dernière publication se rapporte à notre pays; c'est son rapport sur les salaires et le coût de la vie dans les principales villes de France, lequel fait suite à deux remarquables rapports du même genre sur l'Angleterre et sur l'Allemagne, résultats d'une enquête internationale entreprise par le Board of Trade.

In concluding his address, which dealt with the responsibilities of statisticians to the public and described statistics as "the servant of the sciences," M. Levasseur alluded to the fact that the jubilee of this Society coincided, not only with the foundation of the Institute, but also with the twenty-fifth anniversary of the Statistical Society of Paris, and that the twenty-fifth anniversary of the Institute nearly coincides with the jubilee of the Paris Society this year. A paper was read by Dr. Lexis on "Economic crises," in which he described the periodic fluctuations of economic life as the "fundamental fact," and crises as the effect and not the cause of the fluctuations. The business of the opening meeting concluded with the establishment of four sections for the consideration of papers and communications, viz.: I. Methods and Mathematical Statistics; II. Demography; III. Economic Statistics; IV. Social Statistics.

A separate section for the discussion of theoretical statistics and statistical methods has, I believe, never previously been attempted, and its inauguration at the Paris Congress was due to the initiative of M. Lucien March. He, and the Committee of Organisation, are much to be congratulated on the success of the new departure.

which it is to be hoped will be continued by the Institute in future. The comparatively small British contingent was able to contribute largely, in proportion to its numbers, to the proceedings of this section, Messrs. Edgeworth, Bowley, Yule and Knibbs all taking an active part.

Professor Edgeworth was elected President of Section I, and Signor Perozzo, Vice-president. The proceedings were opened by two papers of a general character. M. Waxweiler surveyed the various fields in which statistical methods are now employed—biology, anthropology, psychology and meteorology as well as economics—and suggested that the theory of statistics should form part of all University courses, not only in economics and sociology, but also in biology and psychology. The suggestion gave rise to some discussion, and ultimately resulted in the appointment of a Committee to consider the question of instruction in the theory of statistics and its place in the curriculum. The British members of the Committee are Professor Edgeworth, Mr. Bowley and Mr. Yule. M. March in his communication "On the application of mathematical processes to the comparison of statistics" referred to a number of the principal applications of diverse methods that had been made during the last five and twenty years, and concluded by indicating three cases in which some standardisation of method might render results more comparable, viz.: (1) index-numbers of prices, (2) results obtained by means of samples only, as in a wage census, (3) graphic diagrams. A committee was subsequently appointed by the Institute to examine the methods of statistical comparison, with a view to standardisation. This committee also included Professor Edgeworth (President), Mr. Bowley and Mr. Yule. The applications of the calculus of probabilities to statistics—the law of error, means and their "probable errors," frequency curves and surfaces and the determination of their constants—were discussed by the President of the section, and Mr. Yule gave an outline of the development of the theory of correlation and its applications to economic and social statistics, with a bibliography which may be of service to the student. An interesting suggestion was made in a short note by Mr. Bowley, viz.: that the condition of the working-classes in one country at different times or in different countries at the same time might be compared by determining the median-wage earner, and he expressed the opinion that within two years the median would be determinable within 5 per cent. for Great Britain. Signor Perozzo dealt with the determination of the age-distribution of married couples given the distribution of ages at marriage and the law of mortality: and M. Borel in a paper on "the differential method" showed the interesting results that may be obtained by studying statistical series by means of the average differences (without regard to sign) between successive years or at intervals of *n* years. The English representatives present at this meeting are specially indebted to M. Max Lazard, who acted as one of the secretaries of the section, for his very able services as interpreter in the discussions.

Professor von Mayr was re-elected President of Section II, and M. J. Bertillon Vice-President. The proceedings opened with the report of Professor Lexis, in the name of the Committee on statistics of tuberculosis. The report suggested that, in the case of a death from tuberculosis the question should be asked whether any other member of the family had died of the disease, and that deaths from tuberculosis should be classified according to the sanitary condition of the dwelling, number of rooms, etc. The report was followed by a memoir by M. Bertillon on phthisis and alcoholism, discussing the relation between these two factors in the different departments of France. At a later meeting M. Nicolai presented the report of the Committee on the fecundity of marriages; the report deals with the forms and tables necessary for a special investigation at the time of a census or for subsidiary investigations on the occasion of deaths of married persons or at the time of divorces. Suggested *questionnaires* and tables are given. Two papers on infantile mortality, in France and in the Netherlands, were contributed by M. Huber and M. Methorst respectively. M. Meuriot read a very interesting study of urban agglomerations and their development. Mr. Yanagasawa gave an account of the census of Tokio and Kobé, Mr. Willcox dealt with marriage and divorce statistics of the United States, and Dr. von Juraschek with statistics of the blind. In a short contribution by M. March on the distribution of the sexes for the consecutive children of the same mother, the curious conclusion is reached that the sex of a second child is not statistically independent of that of the first; taking the first two children from a very large number of families, there is an excess of couples of the same sex, and this result is borne out by other data.

M. Yves Guyot was elected president and M. Raffalovich vice-president of the third Section. M. Levasseur opened the proceedings with an address on the course of corn prices in various countries, illustrated by diagrams based on data collected by Dr. Bela Foldes, who having not then arrived sent a report on behalf of the Committee on Corn Prices, of which he is reporter. Considerable discussion took place, in the course of which M. Paisent, Secretary of the Committee of the French Agricultural Syndicates on the sale of wheat, gave an account of the system of price returns adopted by that organisation. The whole question was again referred to the Committee on Corn Prices, which subsequently held two meetings, at which communications were presented describing the official returns of France, Germany and the United Kingdom. It was decided to obtain official information on the collection of prices in the United States and Canada, and certain suggestions were made with the view to securing international uniformity. The Committee was enlarged, and now consists of Sir A. Baines, Major Craigie, M. Faure, Dr. Foldes, Mr. Rew and M. Tisserand.

At Copenhagen in 1907, a Committee was appointed, after some discussion, to obtain information as to the bounties and subventions given in different countries to agriculture, industry, commerce and navigation, and M. Raffalovich now presented the result of the inquiries, obtained partly from official documents and partly from communications sent by members of the Institute. The report, while containing much interesting material, could not be regarded as exhaustive, and it was decided to continue the inquiries and to express the hope that the different Governments would each publish an account of the subventions which they have granted or at present grant. On behalf of the Committee on fishery statistics, Mr. Rew presented a preliminary report, with the promise of a fuller report at the next session. M. Jacques Bertillon read a paper on International statistics of successions. An examination of the official documents published in France, Italy, England, Spain, Holland and Roumania led him to the conclusion that the number of persons leaving property at death was relatively highest in France. M. Kiær presented an interesting and suggestive report on the social distribution of incomes, and it was resolved to appoint a Committee to investigate the subject further on the lines indicated, Sir A. Baines representing this country thereon. Another committee was appointed to consider the establishment of a statistical record of State and Municipal industrial undertakings. M. Raffalovich, who made the proposition, observed that this would be valuable as affording information on the vexed question of the industrial capacity of political organisms. M. de Wendrich presented a report on statistics of international transportation, and insisted on the importance of a way-bill for each wagon or boat, as suggested at the Copenhagen Session, and reported the adoption of the principle by certain companies. The Committee, of which he is the vice-president and reporter, had conferred with representatives of steamship companies and other persons concerned in transportation with the view to the adoption of a common form of way-bill. He was asked to pursue his inquiries and to present at the next session a definite form which could be recommended for adoption generally. It was also resolved that official publications should comprise summary tables of the traffic passing by rail or sea between different countries. An ambitious project was advocated by M. Zahn, who desired statistics which would give comparative figures of the receipts, expenditure, liabilities and wealth of all nations. He admitted that it presented great difficulties, but urged that the Institute ought to make an attempt in this direction. Ultimately, the idea was modified by the section, which proposed the appointment of a committee to study the ways and means of establishing comparative international statistics of finance, commencing with the budgets of public expenditure. The committee comprises MM. Zahn, Stringer, Faure, Rew, Levy, Neymarck, Methorst, Juraschek, Raffalovich and Ford.

Of the fourth Section M. Delatour was elected President and M. Mataja Vice-President. A report from the committee on statistics of accidents of labour was presented by MM. Cheysson and Füster and gave rise to considerable discussion. Opinions, as usual, diverged on the relative desirability and possibility of obtaining greater detail, but eventually three forms of return as suggested by the committee were adopted by the section "in principle"—a saving phrase. When the question came before the General Assembly, M. Delatour, on behalf of the section, submitted further proposals, which were endorsed by the Institute. After submitting the adoption of the forms suggested, he alluded to the difficult question of the classification of industries, which, however, was much simplified by the technological dictionary now laid before the Institute. He proposed that the committee of the Institute should confer with the permanent committee of the Congress on Social Assurances, with the view to united action. This was agreed to, and the committee was requested to report further at the next session. Papers were read on criminal statistics of Belgium, France and Holland; on statistics of the Austrian periodical press (by Dr. von Juraschek); on the statistical union of Italian towns, &c. M. Raseri presented a report on statistics of public assistance, which aroused some discussion, in the course of which M. Raseri explained that in Italy there are two classes of institutions, the one receiving indigent poor for a limited period, and the other more in the nature, apparently, of what we should term almshouses. M. Stepanow gave some particulars relating to public assistance and private benefactions in Russia. M. Raseri was requested to continue his studies on the subject, with the view of attempting to obtain comparable international statistics relating thereto.

At the Copenhagen Congress the Institute recommended the preparation of a technological dictionary of industries and professions and appointed a committee to further this end. The project was taken up by the French Government and put in hand by the service of the general statistics of France of which M. Lucien March is the very capable chief. M. March being also appointed reporter of the committee of the Institute was able to secure, in his dual capacity, any assistance he needed. During the last two years the work has been in preparation and the aid of government departments, more especially in England and Germany (the work being in French, English and German) was obtained. Copies of the first edition were now presented to the Institute, which, in general assembly, took formal note thereof, and, continuing the powers of its committee to assist in preparing future editions, rendered thanks, most worthily due, to M. Lucien March, to Dr. van der Borght (president of the committee) and to M. Huber, of the French general statistical office, who had assisted M. March in the preparation of this most useful compilation.

A project of a somewhat similar character was also set on foot at Copenhagen when on the proposal of M. Mandello, a committee was appointed to prepare a vocabulary of the general statistical terms used in official publications. It now took the wider scope of "a vocabulary of the terms of political economy and statistics," and in this form was referred for preliminary consideration to the combined third and fourth sections. M. Mandello, in collaboration with M. Otlet, presented an interesting report, embodying a definite scheme for the preparation of such a vocabulary. The discussion went rather in the direction of suggesting the limitation of the scope of the work and eventually it was resolved by the general assembly that the committee appointed in 1907 should prepare a list of general terms which should form the statistical vocabulary.

In addition to 16 meetings of sections and several meetings of committees there were five meetings of the Institute in general assembly. At these gatherings the business largely consisted of the consideration of reports and propositions brought up by the sections. But one or two addresses such as that by M. de Foville on the monographic method and its variants, and by M. Levasseur on the distribution of the world's population—both of them contributions which notably enrich the proceedings of the Institute—were delivered to the Institute as a whole, while there was also a certain amount of business such as the election of new members, the reception of the reports of the Secretary General, of the Treasurer and of the Auditors, the election of officers, the selection of the next place of meeting and the consideration of any proposed alterations of the rules. The election of new members is a somewhat formidable process, and since the previous session two attempts to secure the election of members to fill vacancies in the list had failed in consequence of inability to secure the requisite number of votes. Elections at the sessions are however not quite so difficult as by post, and by general goodwill eight places on the roll were satisfactorily filled. Among the successful candidates were Mr. Adams, of the Irish Agricultural Department, and Dr. Wilbur, of the United States Census Office, who were respectively first and second in the ballot. An animated discussion took place on a proposal by M. Nicolai to amend the rule relating to the election of honorary members, which in the end was negatived, the existing rule being maintained.

A most important subject of general interest, as affecting the work of the Institute, was brought forward by Dr. van der Borght, who proposed the creation of an International Statistical Office, under the direction of the Institute, which should, *inter alia*, publish a periodical bulletin summarising the statistics of the different countries. After expounding his views—which had already been circulated among certain members of the Institute concerned in official statistics—he asked that a commission should be appointed to examine and report upon his proposal. This was carried, in spite of some opposition, but the constitution of the commission was not settled without difficulty. It was agreed to limit its numbers to 21, and allow two representatives to each of the chief countries. Eventually, on a ballot, it was constituted as follows: MM. Bodio, van der Borght, Fontaine, de Foville, Guillaume, Hanabusa, Julin, von Juraschek, Kiær, Lange, Mandello, March, von Mayr, Raffalovich, Rew, Sir Llewellyn Smith, Sundbärg, de Vargha, Verijn Stuart, Willcox, Zolotareff. At a meeting of the Commission, held subsequently, M. de Foville was elected president, Dr. von Juraschek vice-president, and MM. van der Borght and Mandello reporters.

To the lighter side of the proceedings—the dinners, receptions, fêtes and excursions—one cannot in these serious pages do sufficient justice. These occasions for meeting, where subjects not on the "order of the day" could be discussed with conversational freedom, do, however, in their degree, contribute very materially to the interchange of ideas and thereby the furtherance of statistical progress which is the aim of the Institute. If it cannot be said that nothing but "shop" was talked outside the formal meetings, it is at any rate certain that statistics formed the main topic of the speeches and conversation. The first general gathering took place at the reception held in the evening of 3rd July, at the College of France, by M. Levasseur, who had previously entertained, at déjeuner, the members of the Bureau. After the opening of the sessions on the morning of the 4th, M. Viviani, the Minister of Labour, entertained the Bureau and certain other members at déjeuner, and afterwards with Madame Viviani gave a reception to all attending the session. Later in the afternoon, the President of the Republic and Madame Fallières gave a reception at the Elysée—a function the brilliancy of which was somewhat marred by heavy rain, which prevented the gardens from being used as much as was contemplated. On the evening of the 5th a dinner was given by the Committee of Organisation, at which the Minister of Finance and the Minister of Labour were present. M. Caillaux made an interesting speech, dwelling on the importance of statistics, especially in connection with the work of a Ministry of Finance. The dinner was followed by a charming musical, dramatic and terpsichorean entertainment, given by distinguished performers from the Comédie Française and the Opera. In the afternoon of the following day an excursion was made by train to Chantilly, lunch being served on the way there and tea on the way back. The weather was especially unkind, and the expedition, which should have comprised the gardens and the park, was confined to the house. In the evening the Minister of Finance and Madame Caillaux gave a dinner, followed by a reception. On Wednesday the President of the Republic entertained the Bureau and a number of other members of the Institute at déjeuner at the Elysée, the Ministers of Finance and Labour being among the guests. At six o'clock on the same day the Statistical Society of Paris held a session to which members of the Institute and of the Royal Statistical Society were specially invited. M. Payelle, the President of the Society, presided, and gave an address on the origin and development of the society. Addresses were delivered by MM. Levasseur, Neymarck, and Meuriot, and a dinner followed, at which M. Payelle was again in the chair, and made a most interesting speech, especially acknowledging the presence of the representatives of kindred societies, mentioning particularly the presidents of the Society of Political Economy of Paris and of the Royal Statistical Society. The venerable M. Passy made a vigorous and eloquent response for the former society, and on behalf of this society Sir Athelstane Baines, speaking in French, responded as follows:—

I thank you heartily for the honour you have done the Society I represent in coupling its name with that of the sister Society whose hospitality and cordial welcome we are enjoying this evening. The reference by the President to the relationship between the two Societies authorises me to put myself in the position of a good old uncle addressing his favourite nephews—and in that capacity I can assure the members of the Paris Society that the kindly wishes, the amiable remembrance and the family friendship which the President has so felicitously expressed are, and for the last fifty years have been, heartily reciprocated on the other side of the Channel. I only wish that I could manifest our friendship towards the Paris Society in terms as warm and eloquent as those used of us by M. Payelle, but unfortunately, though the spirit is willing, the tongue is incapable of the task, except in my native language. In that language then, I beg to assure the President and members of the Statistical Society of Paris that, in spite of the intimate relationship in which we stand to each other, there has never been the slightest cloud in the good understanding which has existed between us since the fortunate birth of the younger sister; and with this experience behind us, I see no reason to anticipate that there ever will be cause for any other feeling. We pursue, each on our own line, the same object—truth, and we both owe the authority with which our conclusions are invested, to the probity and impartiality of our research. Of late years, statesmen and diplomatists have established between our countries a relationship for which I must use a French term, one, however, already rooted in English—the "Entente Cordiale." Am I not justified in hoping that this "entente" will be in no degree less durable, less friendly, than that which has existed without the aid of statescraft for so many years; and which extends beyond the frontier of any political region, between all the disciples of the science we serve, bringing us into fraternal discussion at the Congress of our Institute?

M. le Président, for myself, and speaking for those of your statistical cousins who have accompanied me from England, I beg you to believe that the warm welcome, the charming consideration and the comprehensive Parisian hospitality with which you have received us, have left in our memory an impression which cannot be effaced.

Thursday was devoted to an excursion to Rouen, where déjeuner at the Hotel Angleterre was adorned by a short address from M. de Foville. Time was given for an inspection of the Cathedral and town, and an excursion was made to Bon Secours where tea was provided. Dinner on the train during the return journey enabled the members after their arrival in Paris to accept the invitation of Prince Roland Bonaparte to a reception. On Friday afternoon Monsieur and Madame Pallain held a reception at the Bank of France, and in the evening a performance of *Samson and Dalila* was given at the Opera in honour of the Institute. On Saturday the Society of Political Economy gave a déjeuner at the Pré Catelan in the Bois de Boulogne, which was followed by some very interesting speeches by MM. Passy (President of the Society), Levasseur, Yves Guyot, Neymarck and others. In response to the toast of the Royal Statistical Society, Major Craigie briefly responded. In the afternoon the Municipality of Paris received the members of the Institute at the Hotel de Ville, the goodwill of the fair city being expressed by the President of the Municipal Council and the Prefect of the Seine. M. Bodio, the new President of the Institute, rendered thanks on behalf of its grateful members. The final function—*le dîner d'adieu*—took place in the evening at the Hotel Continental, where after cordial interchange of valedictory compliments, the members of the Institute—or those who still remained—took leave in hope of reunion at The Hague in 1911. R.H.R.

II.—*A Practical Method of Estimating the Velocity of Circulation of Money.* By IRVING FISHER, *Professor of Political Economy at Yale University.*

I. *First approximation.*

HITHERTO no actual statistics for money-velocity have been attempted, while for deposit-velocity Pierre des Essars alone has given figures. In fact it has long been believed impossible to ascertain statistically the velocity of circulation of money. This opinion was well expressed by Jevons,[1] who wrote:—

"I have never met with any attempt to determine in any country the average rapidity of circulation, nor have I been able to think of any means whatever of approaching the investigation of the question, except in the inverse way. If we know the amount of exchanges effected, and the quantity of currency used, we might get by division the average number of times the currency is turned over; but the data, as already stated, are quite wanting."

As we shall see, however, data do exist, capable of revealing the "amount of exchanges effected." In fact this amount is approximately equal to the total money deposited in banks, plus the total wages paid.

This formula is as simple as it may at first seem mysterious. The chief peculiarity of the method which this formula represents, and the feature which makes it adapted to practical use, is that it utilises bank records and other ascertainable statistics as a means of discovering the total value of money transactions. The method is based on the idea that money in circulation and money in banks are not two independent reservoirs, but are constantly flowing from one into the other, and that the entrance and exit of money at banks, being a matter of record, may be made to reveal its circulation outside.

It is obvious how the bank record would be read were it true that every dollar withdrawn from banks circulated once and only once before being redeposited. Under these circumstances the annual flow of monetary circulation would exactly equal the annual withdrawal from banks prior to circulation, as well as to the annual deposits in banks subsequent to circulation. Under these circumstances every dollar used in exchange for goods would be, before its exchange, withdrawn from bank and afterwards redeposited. Since we have a record of the first and last steps of the three, viz., the withdrawals and the deposits, we would possess the means of knowing the intermediate step, the exchange of money for goods.

In actual fact, however, the situation is not so simple, for the reason that money withdrawn from banks is often circulated more than once. Yet the complications involved follow definite laws. They do not destroy the value of the bank records, but merely make it somewhat more difficult to read. We hope to show (1) that in actual fact much money circulates out of bank only once, as in the hypothetical case just mentioned; (2) that when it is paid for wages, it usually circulates twice; and (3) that only rarely does it circulate three or more times before completing its circuit back to the banks.

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[1] *Money and the Mechanism of Exchange.* London, 1893, p. 336.

We falsely picture the circulation of money when we think of it as consisting of a perpetual succession of transfers from person to person. It would then be, as Jevons said, beyond the reach of statistics. But we form a truer picture if we think of banks as the home of money, and the circulation of money as a temporary excursion from that home. If this description be true, the circulation of money is not very different from the circulation of checks. Each performs one, or at most, a few transactions outside of the bank, and then returns home to report its circuit.

For the purpose of tracing the circulation of money, and measuring it by bank records, we may classify the persons who use money in purchase for goods into three groups:—

1. Commercial depositors, *i.e.*, all engaged in business—firms, companies, and others—who have bank deposits mainly or wholly apart from personal accounts.
2. All other depositors, chiefly private persons.
3. All who, like most wage earners, are not depositors.

These three classes we shall distinguish as "Commercial depositors," "Other depositors," and "Non-depositors," or *C*, *O*, and *N*. The money in the possession of "Commercial depositors" we shall call "till money," and the rest "pocket money."

The three groups necessarily include all in the community who circulate money. By circulating money is meant expending it in exchange, not for other circulating medium, as checks, but for goods.

The nature of these three groups must now occupy our attention. In countries advanced in the art of banking, "Commercial depositors" include practically all business establishments, and little else. "Other depositors" include most persons in the professional and salaried classes and proprietors, and little else, while the class of "Non-depositors" is almost coterminous with wage earners.

It is true that these characterisations of the three classes are not quite complete. In regard to "Commercial depositors," for instance, there are some small business establishments like street vendors, having no bank accounts. But their number is small in comparison with the number of business persons who have accounts, and, what is more to the point, the money they handle is even more negligible. In the United States at least, excepting in the rural parts of the South and a few other places, the money expenditures of which are very small, the custom of having bank accounts is practically universal among business establishments. To keep a bank account is, in fact, a necessity for an ordinary business man, if he wishes to succeed. Otherwise he practically deprives himself of three of the most essential aids in modern business, the use of circulating credit, the use of remittance by post, and the use of time credit.

Unless a dealer is obliged to pay "spot cash" or prefers to do so—and such cases are both few in number and insignificant in the amounts of money involved—he will almost invariably find it easier to make payment by check. Moreover, the very fact that most other business men use banking facilities creates in his mind the desire to have an account himself, both because he dislikes to appear "different," and because when others pay him by checks he finds it necessary to cash these checks, which is always more trouble than to deposit them.

Cash payments are especially inconvenient when business is done at a distance. Remitting money by post, express, or personal delivery is troublesome, risky, and expensive as compared with posting a letter containing a check. Even a post-office money order is a clumsy and expensive substitute, and its use proclaims the user an insignificant financial factor.

Again, a business man without a bank account cannot usually obtain time credit, either from dealers or from banks. In the United States a bank likes to lend only to its own depositors. A business man who asks for a bank loan usually meets with the request to open an account. If he should seek a loan from another dealer, as, for instance, his supply house, the absence of a bank account would arouse suspicions as to his business standing, and might lead to refusal.

These facts, confirmed by observation and inquiry, have led to the belief that practically all business in the United States, certainly over 99 per cent. (measured not by number, but by size), makes at least some use of bank accounts. Even in localities where there are no banks, traders usually like to have a bank account in the nearest town, in order to facilitate their dealings as purchasers. We conclude, therefore, that the category of "commercial" depositors practically coincides with the category of business establishments.

"Other depositors" include most proprietors, professional, and salaried persons. Almost no wage earners are included, and almost no business establishments or business men in a business capacity. When a single individual conducts a business he usually separates carefully his business self from his personal self. John Smith, the individual, and the John Smith Shop are distinct. The pocket money of the one and the till money of the other are not confused. Where payments are made from one to the other, the transaction is regarded as of the same nature as the payments between the shop and any other person. Originally and under primitive conditions it is, of course, true that no such distinction was observed, and even to-day there are cases where the differentiation is unmarked, *e.g.*, hucksters, pedlars, fruit stands, and small country shops. But, as we have seen, these persons are not usually depositors. Moreover, the number is small, and since by the nature of the case the money they handle is still smaller, their classification is, for practical purposes, a matter of indifference. It is true that occasional cases exist of ordinary business men who have the exclusive ownership of a business and do not take care to separate clearly their business and their personal accounts. Yet we may in such cases perform the separation in thought. Where such a person withdraws money from his till and puts it in his pocket, we may say his business self has paid his personal self some dividends of the business. Likewise, his checks drawn are usually distinguishable as between his business or his personal expenses, even though he himself fails to keep two separate bank accounts. But such cases are rare and unimportant, because modern business of size is usually conducted by partnerships and corporations, where a strict separation of accounts is necessary to safeguard conflicting interests. So much for the line of demarkation between "other depositors" and "commercial depositors." As to the line separating "other depositors" and "non-depositors," it should be observed that, although "other depositors" include most proprietors and professional and salaried persons, some proprietors and professional men, especially in rural communities, and some salaried persons, chiefly small clerks, are "non-depositors."

Finally, "non-depositors" consist chiefly of those who are classed in statistics as wage earners. While there are some wage earners who are depositors,[2] they are rare; and while there are some "non-depositors" who are not wage earners, especially the agricultural proprietors (farmers) and small clerks, the amount of money circulated by them is small in comparison with the total circulation. While the line separating wages and salaries is not definitely marked in theory, it is usually recognised easily in practice.

Children under, say, twelve years need not be included in any of the three categories, as they are not handlers of money; at least, not to a sufficient degree to have any appreciable influence on the total circulation.

We may now picture concretely the main currents of the monetary flow, including the circulation of money in exchange for goods. Fig. 1 illustrates the three principal types.

The corners of the triangle C, O and N represent the three groups of "Commercial depositors," "Other depositors" and "Non-depositors," and the B's represent banks. The arrows represent the flow of money from each of these four categories to another. Thus B_o represents the annual withdrawals from banks by "Other depositors," O_c the spending of this withdrawn money by "Other depositors" among "Commercial depositors," and C_b the return of the money from the "Commercial depositors" to the banks. This circuit ($B_oO_cC_b$) of three links is very common. A second type of circuit is represented by a chain of four arrows ($B_oO_nN_cC_b$). It is illustrated by private depositors drawing money (B_o), and paying wages (O_n) to servants who in turn spend the money (N_c) among tradesmen who finally deposit it (C_b). A third type of circuit, also fourfold, is represented by the arrows $B_cC_nN_cC_b$. It is illustrated by commercial firms cashing their checks at Banks (B_c) for pay rolls, paying with the cash so obtained wages (C_n) to workmen who spend it (N_c) among other tradesmen who re-deposit it (C_b). These three types are not the only ones, but they are so much more important than any others that they merit our undivided attention before a completer study is undertaken. The diagram has been constructed for the purpose of exhibiting them uncomplicated by other details.

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[2] The term "depositors," as here used, does not, of course, include savings bank depositors. A savings bank is not a true bank of deposit, providing circulating credit, but is itself to be classified as a "commercial depositor." It sells its own so-called deposits (as a kind of small investment) and deposits the money received therefore in a true bank of deposit, precisely like a shopkeeper or other commercial depositor.

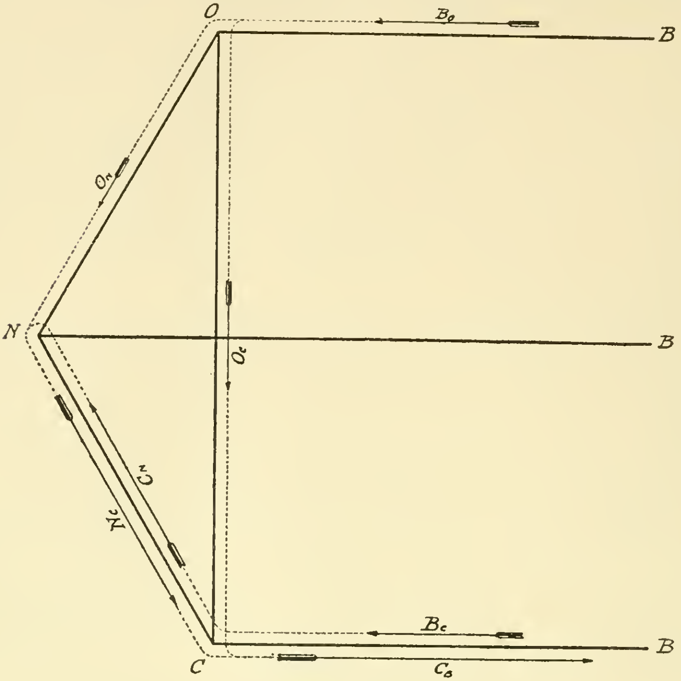

Fig. 1.

It will be noted that not all of the flows described are examples of the *circulation* of money. As already indicated, money may be said to circulate only when it passes in exchange for *goods.* Its entrance into and exit from banks is a flow but not circulation. In the diagram the horizontal arrows represent such mere banking operations, not true circulation. The arrows along the sides of the triangle, on the other hand, represent actual circulation. The diagram shows four such arrows, representing the four chief types of circulation: O_c payments of money from "Other depositors" to "Commercial depositors" in the purchase of goods, O_n payments from "Other depositors" to "Non-depositors," as when a housewife pays wages, C_n payments from "Commercial depositors" to "Non-depositors," as when a firm pays wages, and N_c payments from "Non-depositors" to "Commercial depositors," as when a wage earner buys goods of a merchant.

These four types of circulation of money occur in the three circuits already described, being sandwiched between the flows from and to the banks. The first, O_c, is contained within the circuit $B_oO_cC_b$, and, since no "Non-depositors" intervene, represents money circulating *once* between its withdrawal from bank and its re-deposit there. The remaining types (O_n, C_n and N_c) are contained within the two other circuits ($B_oO_nN_cC_b$ and $B_cC_nN_cC_b$), and, owing to the fact that "Non-depositors" intervene, represent money circulating *twice* between withdrawal and re-deposit.

In short, one of the three circuits ($B_oO_cC_b$) shows money circulating *once* out of bank. Both the others pass through N, and show money circulating *twice* out of bank. The diagram, then, represents all circulating money as springing from and returning to the banks; all of it as circulating *at least once* in the interim; and that portion handled by "Non-depositors" as circulating *once in addition*. Therefore the total circulation exceeds the total flow from and to banks by the amount flowing through "Non-depositors." In other words, the total circulation in the diagram is simply the sum of the annual money flowing from and to banks and the money handled by "Non-depositors." The quotient of this sum divided by the amount of money in circulation will give approximately the velocity of circulation of money.

We have, however, still to consider the correction to be made for the less important forms of monetary circulation excluded from the diagram.

II. *The complete formula.*

In order to estimate the degree of accuracy of the first approximation for the circulation of money, we need to compare this approximation with a complete formula framed to include all possible transfers of money against goods.[3] There are nine possible kinds of transfers, three being respectively *within* each one of the three groups C, O, and N, and six being *between* each pair of these three, in either direction.

The exchanges possible within a class are (1) those between one "Commercial depositor" and another "Commercial depositor"; (2) those between one "Other depositor" and another; and (3) those between one "Non-depositor" and another. The transfers possible between classes are (4 and 5) those between "Commercial depositors" and "Other depositors" in either direction; (6 and 7) those between "Other depositors" and "Non-depositors" in either direction; and (8 and 9) those between "Non-depositors" and "Commercial depositors" in either direction. The three intraclass kinds and the six interclass kinds make the nine possible kinds of transfers of money against goods.

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[3] That is, all transfers *within* the community considered. If it is desired to include as part of a community's circulation the sums exported or imported in foreign trade, these may most conveniently be added at the end. But even if they be included they will be of trifling significance, partly because foreign trade is usually very small compared with domestic, and partly because money is so little used in foreign trade, especially if we exclude bullion from the category of money.

Fig. 2 gives a complete picture of all these nine flows of money in exchange for goods, that is, the entire "circulation of money." The nine flows are represented in the diagram by the nine arrows about the triangle, six being along the three sides of the triangle and representing interclass circulation, and three (c, o, and n) at the corners to represent intraclass circulation. (The remaining six arrows on the horizontal lines represent, of course, mere banking operations.) The total circulation or monetary flow (F) in exchange for goods is therefore the sum of the magnitudes represented by these nine arrows, viz. :—

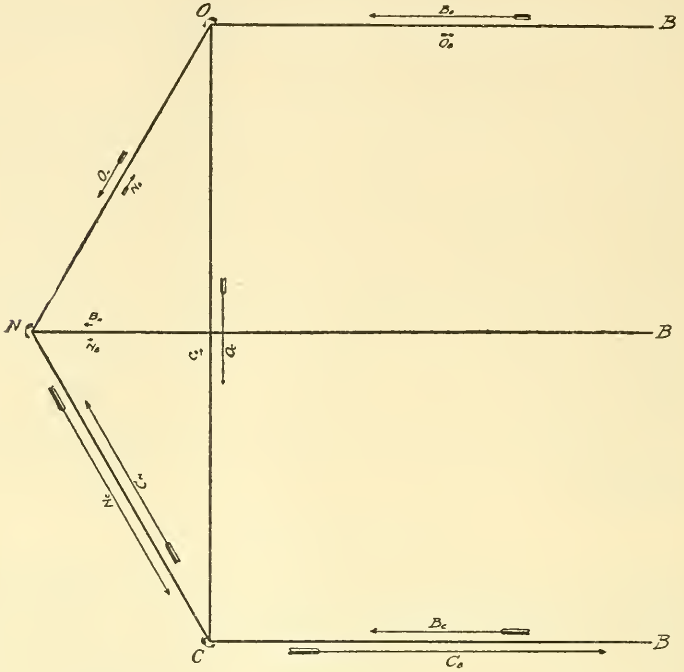

Fig. 2.

$$F = O_c + C_o + N_c + C_n + O_n + N_o + c + o + n. \qquad (1)$$

This is an exact formula for the circulation of money. We shall now compare it with the inexact first approximation, namely, "money deposited plus expenditures of 'non-depositors.'" This comparison will express the error of the first approximation, and will suggest a method of transforming the exact formula (1) into a shape more suitable for statistical application. First, we need to express algebraically the first approximation. This may easily be done by inspecting the diagram, Figure 2. The total money deposited is $C_b + O_b + N_b$, while the total expenditure of

"Non-depositors" is $N_c + N_o$. The sum of these two expressions we shall call F' and is:

$$F' = C_b + O_b + N_b + N_c + N_o, \tag{2}$$

which is therefore the algebraic expression for the first approximation.

To obtain the difference, $F - F'$, between the exact and the approximate formula, we subtract (2) from (1), cancelling N_c and N_o and placing the negative terms first. We thus obtain for a remainder (r) the following:—

$$r = F - F' = -C_b - O_b - N_b + O_c + C_o + C_n + O_n + c + o + n. \tag{3}$$

That the value of $F - F'$ is small may be seen clearly by transforming (3). We shall transform it by using the principle that the net outflow (*i.e.*, outflow minus inflow) from the contents of any reservoir must equal the net decrease in its contents during the same time; or (algebraically expressed) that the net outflow (positive or negative) plus the net increase (negative or positive) must be zero. We may apply this principle to any reservoir or store of money, but shall here find it most helpful to apply it to the reservoir of money contained among the "*Commercial depositors*" *and* "*Non-depositors*" *taken together as one group.* Let us designate the combination of these two as the "*CN* group." The total outflow indicated in the diagram from this "*CN* group" is evidently $C_b + C_o + N_b + N_o$, and the total inflow $B_c + O_c + B_n + O_n$. Hence the net outflow, *so far as the diagram shows us*, is:

$$C_b + C_o + N_b + N_o - B_c - O_c - B_n - O_n.$$

This, plus the net outflow *not* shown in the diagram, is the true net outflow. Since the diagram was constructed to show only flows against goods (monetary circulation), and flows to or from banks, we have still to take account of money flowing in the community in exchange for something else than goods, and that flowing without any exchange at all, as well as any net outflow *outside* of the community.

We have thus to take account of three undiagrammed flows. The first is the net outflow of money from the "*CN* group" to the *C* group, which, though in exchange, is not in exchange for goods. This means simply cashed checks, for, according to the classification we are here using, "goods" are taken to include anything exchangeable, not either money or checks. Our first correction is therefore the net outflow of money from the "*CN* group" for cashing checks, *i.e.*, the difference between the checks cashed by the "*CN* group" for the "*O* group" and those cashed in the opposite direction.

It will be understood that we have nothing to do here with the cashing of checks at banks, for this is included in the diagram (B_o, B_n, and B_c). Moreover, we have nothing to do here with cashing of checks *within* the "*CN* group," as when a storekeeper cashes a check presented by a "Non-depositor." We only have to do with the net outflow for cashed checks from *CN* to *O*. This net outflow (which may be positive, negative, or zero) we shall designate by the letter a, to stand for "accommodation" checks.

For the second correction we have to designate the net outflow of money *given away* by the CN group in gifts, taxes, thefts, &c., for which no specific goods are received in return. This net outflow may be designated by g.

We have, thirdly and lastly, the net outflow of money with respect to the "CN group" outside of the community, *i.e.*, the net amount of money which is lost to the country by export, fire, shipwreck, melting, &c., in excess of that imported, minted, &c. This net outflow may be designated by e, to stand for "external" outflow. Adding the net undiagrammed outflow $(a + g + e)$ to the net diagrammed outflow we have, for the total net outflow—

$$C_b + C_o + N_b + N_o - B_c - O_c - B_n - O_n + a + g + e.$$

On the reservoir principle already explained, the algebraic sum of this net outflow from the "CN group" and the net increase of the money in that group must be zero. Representing the net increase by i, we have

$$0 = C_b + C_o + N_b + N_o - B_c - O_c - B_n - O_n + a + g + e + i. \qquad (4)$$

We now place this equation under the equation giving the value of $F - F'$, as follows:—

$$r = F - F' = -(C_b) - O_b - (N_b) + (O_c) + C_o + C_n + (O_n) + c + o + n \qquad (3)$$

$$0 = (C_b) + C_o + (N_b) + N_o - B_c - (Oc) - B_n - (O_n) + a + g + e + i. \qquad (4)$$

Adding and cancelling the terms indicated in parentheses, we have

$$r = F - F' = (C_o + C_n - B_c) + (C_o + N_o - O_b) + (c + o + n) + (a + g + e) + i - B_n. \qquad (3)'$$

The terms are here arranged, as far as can be judged, in the order of descending importance.

By using the expression just obtained for r, the complete formula (1) for the circulation of money may now be put in a form suitable for statistical application. Since $r = F - F'$, then $F = F' + r$. Substituting for F' and r the expressions already expressed in (2) and (3)′, we have, as a transformation of (1),

$$\begin{aligned} F &= F' + r \\ &= (C_b + O_b + N_b) + (N_c + N_o) \\ &\quad + (C_o + C_n - B_c) + (C_o + N_o - O_b) + (c + o + n) \\ &\qquad + (a + g + e) + i - B_n \qquad (1)' \end{aligned}$$

= (1) all money deposited
+ (2) money expenditures of "Non-depositors"
+ (3) C's money expenditures from tills (not withdrawn from bank)
+ (4) O's money receipts pocketed (not deposited in bank)
+ (5) intraclass monetary circulation
+ (6) CN's undiagrammed net outflow of money.
+ (7) CN's net increase of money on hand
− (8) N's withdrawals of money from bank.

This is a complete and universal formula for the circulation of money in any community. Its first two terms constitute the first approximation, and the other six terms the remainder term r.

The first two terms are by far the most important. The last three terms are doubtless quite negligible under all circumstances. I am also reasonably confident that, in the United States, the 3rd, 4th, and 5th terms amount to less than 10 per cent. of the total and probably less than 5 per cent. Anyone familiar with the inaccuracies of statistics knows that these are small errors, especially for a magnitude which has hitherto eluded any attempt at measurement. We may therefore distinguish three successive stages in our approximations. The first approximation comprises only the first two terms, viz., money deposited plus expenditures of "Non-depositors"; the second includes in addition terms (3), (4), and (5), viz., till-paid money expenditures of C, pocketed money receipts of O, and intraclass circulation; while the third is complete by including terms (6), (7), and (8), none of which have practical importance. The formula is presented in the hope of arousing discussion and investigation which will disclose in particular to what extent it may be applied in countries where data exist for the first two terms, viz., money deposited and expenditures of "Non-depositors." The former is certainly a matter of record in most civilised countries, and the latter always consists largely of wages, a magnitude which has for long been a favourite subject for statistical estimate.

III. *Statistical application.*

We shall now exemplify the use of our formula by means of actual figures for the United States. The report of the Comptroller of the Currency for 1896 gives a basis for estimating the annual money deposited in banks. The result is approximately 11 billions of dollars. The census statistics and the unofficial estimates of Wm. C. Hunt, of the Census Bureau, lead to the conclusion that the money expenditures of wage earners were about 4½ billions. We have merely to add an allowance for other "Non-depositors," besides wage earners, viz., some small clerks, agricultural proprietors and professional men. Making a conjectural allowance for these persons, the total annual money expenditure of "Non-depositors" is placed at 6 billions, which probably errs in excess rather than in deficiency.

Our "first approximation" (F') is therefore 11 + 6 or 17 billions, to which must be added the remainder r consisting of the many terms already explained, most of which are not known with exactness, but all of which are known to be small. The term "small" is always relative, and in this case a term is small which is small compared to 17 billions. For instance, 170 millions is a mere trifle, being only 1 per cent. of 17 billions, while 17 millions is only one-tenth of 1 per cent. We do not have exact statistics for r, and for purposes of comparison we do not need them; for if r is small and varies nearly as the rest of the circulation varies, a large mistake in estimating it will make only a small error in comparisons. Only in case r were both large and variable relatively to the other terms could a mistake in its estimation greatly affect the comparisons.

An attempt has been made to estimate r, not so much for the purpose of obtaining its absolute value, as to set for it wide and safe limits. The detailed estimates for the six terms of which r is composed would scarcely interest English readers. I shall therefore merely outline the methods and results, leaving a more minute description to a book now in preparation on the purchasing power of money.

The third term of the formula is $(C_o + C_n - B_c)$. This represents the till-paid commercial expenditures, or the excess of the money paid out by "Commercial depositors" over the money withdrawn by them from banks. Inquiry shows that the great bulk of the money withdrawn by "Commercial depositors" from banks is drawn for the purpose of paying wages; also that the great bulk of the actual money expended by "Commercial depositors" is for wages. In other words, C_o is very small compared with C_n, and the sum of the two is nearly the same as B_c. Hence the difference $(C_o + C_n - B_c)$, or *till*-paid expenses, is nearly zero. Till-paid expenses, being mostly wages and, as all observation shows, only a small part of total wages, viz., 4½ billions, certainly, I am assured, less than a tenth, can accordingly be set down as less than half a billion.

The fourth term, $C_o + N_o - O_b$, is O's money receipts which are pocketed instead of deposited. Now O's money receipts, $C_o + N_o$, are small in the first place, for O, being depositors, usually receive their dividends, interest, and salaries by check. The chief exception is found in the rents and the professional fees paid by working men to landlords, physicians, &c., and which constitute most of N_o. But these rents and fees paid by working men to private individuals are only a part of total rents and fees of working men, and the total itself is only about 20 per cent. of wages. From this and other clues, we may safely set half a billion as an upper limit for the fourth term.

The fifth term, $c + o + n$, is the circulation within each of the three groups. Obviously only in trifling cases does money circulate between one "Commercial depositor" and another, between two "Other depositors," or between two "Non-depositors." Half a billion is put as an extreme upper limit for the total. This would mean that one dollar out of every thirty-five is spent within the class to which the spender belongs. That the truth is less than this ratio is the universal testimony of representatives of c, o, and n, who have been interrogated.

The remaining three terms are even more insignificant. In the normal state of equilibrium for the "CN group" it is evident that the sixth and seventh terms would both be substantially zero. The eighth term, withdrawals from banks by people who have no bank accounts, represents very exceptional conditions.

We shall summarise the estimates for each of the eight terms in the following table. Each term is placed midway between upper and lower limits estimated as safe, and the possible variation in either direction is indicated after a " ±." Thus $250,000,000 ± $250,000,000 means simply that, though $250,000,000 is assigned as the estimate, the true value may be more or less by an amount not exceeding $250,000,000, in other words, that the truth lies between $500,000,000 and zero.

1st term, money deposited $(C_b + O_b + N_b)$	11,000,000,000 ± 1,000,000,000
2nd term, expenditure of "Non-depositors" $(N_c + N_o)$	6,000,000,000 ± 1,000,000,000
1st and 2nd terms, constituting the "First Approximation" (F')	17,000,000,000 ± 2,000,000,000
3rd term, C's expenditures till paid $(C_o + C_n - B_c)$	250,000,000 ± 250,000,000
4th term, O's receipts pocketed $(C_o + N_o - O_b)$	250,000,000 ± 250,000,000
5th term, intraclass circulation $(c + o + n)$	250,000,000 ± 250,000,000
6th term, net undiagrammed outflow of money from "*CN* group" $(a + g + e)$	000 ± 100,000,000
7th term, net increase of money in "*CN* group" (i)	000 ± 100,000,000
8th term, money withdrawn from banks by "Non-depositors" $(-B_n)$	−500,000 ± 500,000
Total 3rd to 8th terms (r)	749,500,000 ± 950,500,000
Total of all terms (F)	17,749,500,000 ± 2,950,500,000

The remainder, r, is here given as less than a billion. Added to the 17 billions, it makes the total about 18 billions as the estimated circulation of money in the United States in 1896. This estimate is subject to error, but not as much as the total of the possible errors of individual terms, which is nearly 3 billions. Even if each of the possible errors indicated were as likely as not to occur, the chance that in all eight cases they should all simultaneously occur in the same direction is $(\frac{1}{2})^8$, or one chance in 256. We may therefore "trust to luck" that the errors will to some extent offset each other. In fact, the chance of the error reaching half of this amount, or $1\frac{1}{2}$ billions, seems extremely small. The "probable error" can only be surmised to be much less than $1\frac{1}{2}$ billions, for we have not attempted to state the probable errors of the constituent figures, but only *improbable* errors.

Reverting now to the remark with which we began the discussion of money velocity, namely, that it circulates but seldom outside of banks, let us picture our statistical results in the light of this fact.

Evidently if all money circulated once only, then the bank record of 11 billions annually flowing into and out of the banks would also exactly indicate the volume of the intervening work done. This would then be 11 billions. But the truth is, as we have shown, probably about 18 billions, and consequently we infer that some of the 11 billions emanating from banks changes hands more than once before it returns.

Next let us suppose that all of the 11 billions circulated once, except the part passing through the hands of "Non-depositors" (6 billions), and that the latter circulated twice. Then 5 billions circulate once only. Under this assumption we can account for $5 + 2 \times 6 = 17$ billions of exchange work. But we have found in fact 18 billions. The difference is chiefly due to the existence of some money which circulates more than twice outside of banks.

The entire 18 billions may be roughly accounted for by dividing the 11 billions flowing from banks into three parts, 5 billions circulating once and once only, 5 billions twice and twice only, and 1 billion three times. This makes $5 + 2 \times 5 + 3 \times 1 = 18$ billions. Of the three parts, the first (5 billions) is mainly the spending money drawn by "Other depositors," the second (also 5 billions) is money withdrawn from bank for wages and other payments to "Non-depositors," and the third (1 billion) is the small amount not otherwise accounted for. This is only a rough scheme of division. A very small part circulates oftener than three times.[4]

In order to obtain the value of the velocity of circulation, the total circulation of 18 billions must be divided by the amount of money circulating in 1896. This amount is estimated at $974,000,000. Hence the velocity is $18,000,000,000 \div 974,000,000$, a little over eighteen times a year. In other words, money was held on the average about twenty days. If we have made as full allowance for error as we believe, the error in this estimate does not exceed two or three days. This result gives money a slower circulation than most of the estimates or guesses which have been made. These vary, however, all the way from four times a year to 150.

The "first approximation" to the value of monetary circulation evidently gives 17 billions out of our estimated total of 18 billions, showing that the remainder, r, unless it has been greatly underestimated is small, a mere billion. The significance of this fact is that the terms most difficult to estimate statistically are the least important. Of the two terms constituting the "first approximation," the first and most important is susceptible of the most accurate determination of all, while the second is made up chiefly of wages, which also are, or seem destined to become, susceptible of statistical determination.

In fact if we should as a statistical makeshift for the first approximation merely add the amount of money annually withdrawn from deposit to the annual wages, we should account for $11 + 4\frac{1}{2}$ or $15\frac{1}{2}$ out of 18 billions, leaving only $2\frac{1}{2}$ billions to be otherwise accounted for. In other words, this makeshift, or part most adapted to statistical measurement, accounts for about 85 per cent. of the total circulation, leaving only 15 per cent. for the part which can only be determined within wide limits. The two parts may be distinguished as the measurable part (comprising the first term of our formula $(1)'$ and most of the second term), and the conjectural part comprising the remainder. Even if the allowance of $2\frac{1}{2}$ billions for the conjectural part should prove to be but half the truth, the measurable part would still constitute 75 per cent. of the total. The measurable part would therefore still be a safe practical index, or barometer of changes in the volume of circulation. Any excess of variation in the conjectural part, as compared with the measurable part, would, when spread over the whole, produce a disturbance only one-fourth as great. It is reasonable to suppose that the conjectural and the measurable parts will ordinarily vary together. If the measurable part varies 10 per cent., it is natural to suppose that the conjectural part, and therefore also the total of both, will vary likewise. But suppose this assumption erroneous and that, while the measurable part varies 10 per cent., the conjectural part really varies 14 per cent. or 6 per cent. The difference between these and 10 per cent., *i.e.*, 4 per cent., representing a supposed excess of variation of the conjectural part, would produce a difference of only 1 per cent. in the total. The total, instead of varying 10 per cent., would vary 11 per cent. or 9 per cent. Evidently, therefore, any unknown variation in the conjectural part can only cause a trifling variation in the result. In other words, the measurable part will always be a good index of the total—a reliable barometer of circulation. Consequently *money deposits plus wages divided by money in circulation* will always afford a good barometer of the velocity of circulation.

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[4] It may avoid some confusion to remind the reader that we are dealing with sums of money expended for goods, not with individual coins. Many coins remain "in circulation" a long time without returning to bank, because used "in change." But money used in change enters as a subtractive term in monetary expenditures. When $10 are given for an $8 purchase, and $2 are received back in change, $12 have changed hands, but only $8 of monetary circulation against goods have been effected.

It is not always the absolute value of any magnitude we find most useful, but its relative value under different conditions. We may compare the relative length of two ships by measuring their water lines, although this method omits the overhang at either end. Such a comparison will apply roughly to any two vessels, and with great exactness to two ships of the same build. Similarly our proposed barometer will afford rough comparisons for any two countries using banking facilities, and will afford fairly exact comparisons for two successive years in the same country.

The proper statistical procedure would therefore seem to be to provide for the conjectural part by an estimated percentage correction, to be applied to the measurable part as a constant factor. Different correction factors will presumably apply in different countries, as, let us say, 15 per cent. in the United States, 20 per cent. in England, 30 per cent. in France, &c. The chief value of such conjectural corrections would be to enable us to compare roughly the circulations and velocities of different countries. For comparisons in the same country at different times it would be immaterial what percentage correction is adopted or whether none is employed.

By means of the method which has been explained, it is believed that some interesting and valuable results can in the future be obtained, if statisticians in various lands will obtain (1) the total money deposited each year in banks (except by other banks), or, what is normally the same thing, the total money withdrawn from banks (except by other banks); (2) the total wages spent, or, what is normally the same thing, the total wages received; (3) a conjectural percentage addition to allow for the remaining and less known part of our formula; (4) the total money in circulation. The sum each year of (1) and (2) corrected by (3) and divided by (4) will be a very accurate barometer of the velocity relatively considered, as well as a fair approximation to its absolute value. The omission of (3) will not invalidate the results for most purposes of comparison.

The importance of such accurate determinations can scarcely be overestimated, as the remarks on the subject by Jevons, Landry and others have shown. When we know statistically the velocity of circulation of money we shall be in a position to study inductively the "quantity theory" of money, and to discover the significance of that velocity in reference to crises, accumulation of wealth, density of population, rapid transit and communication, as well as many other conditions. In fact a new realm in monetary statistics will have been opened.

III.—*A Statistical Note on Birth Registration in Scotland previous to* 1855; *suggested by Inquiries as to Verification of Birth for Old Age Pensions.* By G. T. Bisset-Smith, *H.M. Registration Examiner.*

In the *Journal of the Royal Statistical Society*, vol. xi, p. 282, *et seq.*, will be found the valuable suggestions made by the committee of the Society on the Registration Bill for Scotland, introduced by Lord Rutherfurd in 1847. For the purposes of statistical science, the parish registers kept in the pre-compulsory registration period in Scotland are almost quite useless. This fact is demonstrated best by a study of the old parochial registers themselves, with their meagre entries and irritating irregularity; and their incompleteness is exposed in the figures with which this brief Note concludes. The writer has himself verified some of the facts and figures quoted; but he wishes to express indebtedness to the "Sketch of the History and Imperfect Condition of the Parochial Records in Scotland" of the late George Seton, Esq., M.A., Advocate, formerly Secretary in the Department of the Registrar-General for Scotland. Contributions to the *Journal* from, or regarding, Scotland appear rare; and it is much regretted that pressure of official duty has rendered this Note brief and inadequate. It relates, however, to a subject which is at present of considerable general interest.

I.

Scots are notoriously migratory. Some of them prefer London to Edinburgh, as was the case with Boswell, the entry of whose birth will be quoted later in this article. Habits of thrift are credited to the Scottish race, also the art of getting on in the world. There must, however, be a considerable number of persons born in Scotland who have failed to accumulate even a modest competency; for the present writer is aware that not a few Scots—some of whom are long resident out of their native country—are now anxious to obtain proof of their age in order to secure that pension claimable by those who, *inter alia*, have attained to three score and ten.

The best evidence is a certificate of the entry of birth or baptism from the old parochial registers of Scotland; and the following notes regarding these records may be of assistance in estimating approximately what proportion of births are likely to be traced in those venerable volumes.

No properly kept register of births existed generally prior to 1855, when the Registration Act came into operation; the old parochial books being nearly all records of *baptisms*, which were kept by the Session Clerk of the Established Church of the parish.

The Act, 17 and 18 Vic., c. 80, which introduced compulsory registration, is entitled "An Act to provide for the Better Registration of Births, Deaths, and Marriages in Scotland,"—implying that some system had been in operation previously. And the Statute (sec. 18) enjoined the preservation of the old registers by requiring their centralisation; accordingly the old parochial registers are now all deposited in the General Registry Office at Edinburgh, where they may be searched and extracts therefrom obtained from the Registrar-General for Scotland.

The Registration Act of 1854 had an important bearing upon the old registers, inasmuch as it allowed (sec. 1) a period of grace for the recording of any birth, death, or marriage which took place on or before 31st December, 1854; such omitted events being allowed to be recorded from the date of the passing of the Act, 7th August, 1854, until the 31st December, 1855. With this important exception, the old system ceased upon 31st December, 1854.

In the seventeen months of grace, a large number of omitted entries were recorded. Whole families, indeed, were registered altogether at that time, frequently from lists kept in family bibles. These entries form an appendix to the records of several of the larger parishes, such as that of Old Machar, Aberdeen, which has 148 large folio pages of addenda. The fact that the legislature made provision in this way for omissions is an indication that the old parochial registers were known to be unsatisfactory and incomplete.

Some clergymen, indeed, had attempted to secure the registration of all the births in their parishes. The minister of Houston (Renfrewshire) discontinued the insertion of baptisms only, considering it his duty to the public to insist that there should be a record of *births*; and, anticipating what is the present-day practice in Scotland, an incumbent of Elie (Fifeshire), made it a rigid rule that he would not baptise a child without the session clerk's certificate of the registration.

Mixed and meagre are the entries of baptisms (or births) in many cases; the value of the records being lessened by the irregularity and the deficiency of the information contained. The place of residence does not always appear, nor is the registration made in every case in proper order of chronology. Such defects lead to confusion, and cause inconvenience in consulting these parish registers, in which, also, baptisms are sometimes huddled promiscuously among deaths and burials, proclamations or marriages, and, occasionally, even intermixed with minutes of the meetings of the kirk sessions.

The original instruction was that in the registers there should be inserted, in addition to the names of the children and of their parents and dates, the names of god-parents, and the attestation of two witnesses. Thus in the Edinburgh Register appears this record of the birth of James Boswell, the biographer of Dr. Johnson:—"Saturday, 18th October, 1740. To Mr. Alexander Boswell, younger, of Auchinleck, advocate, and Mrs. Euphame Erskine, his spouse, a son named James. Witnesses, Walter Macfarlane, of that Ilk, Allan Whitefoord, Receiver-General for North Britain, and Dr. John Pringle, physician in Edinburgh. Born the same day in the morning, and baptized by the Rev. Mr. Robert Wallace, one of the Ministers of the City." The foregoing is a much fuller entry than is general, however, in the old registers, where, as already stated, the record is mostly one of baptisms. For example, the sole entry relating to the entrance into life of Dr. Arbuthnott, the physician and wit of the Court of Queen Anne, is as follows:—"29th April, 1667. Mr. Alexander Arbuthnott, parson of Arbuthnott, had a son baptized called John."

II.

National laws are born rather than made. They are the work of time. It has been well observed that the good legislator rarely invents. He makes use of the rich funds of practice, or he intelligently imitates neighbouring nations.

Scotland had in theory evolved an excellent system of registration, dating from 1551. But the responsibility of putting it into practice was thrown upon the parish clergymen, who did not generally rise to the task. Lack of any real regular general superintendence was one of the reasons why the old system, after a trial of three centuries, was pronounced so defective that the only effectual remedy was civil registration. Although not actually completely compulsory until 1874, England had enjoyed such a system from 1st July, 1837; and—with some alterations—the English system was in 1855 adopted for Scotland. Britain had followed France. A system of vital registration existed in France from 1308; and at the Revolution in 1792 the registers of births, deaths, and marriages were taken from the clergy and entrusted to municipal officials.

Ecclesiastical registration appears to have been in no country a complete success. In Scotland its failure was conspicuous. An Act by the Scottish Privy Council, 10th December, 1616, refers to the "ydill and unnecessar chargeis and expenseis" which had arisen in the judicatories of the kingdom in connection with the numerous questions "anent the tymes of marigeis, baptismes, and decease of personis," owing to the absence of authentic records. The enactment ordained "that in euerie paroche of this Kingdome thair sall be ane famous book and register maid by the Minister of the Paroche."

Injunctions from the General Assembly also failed to make ministers attend effectually to registration. Numerous blanks meet our eyes in searching the old registers; nor did they improve much later. The population abstract of 1801 showed, indeed, that out of 850 parishes in Scotland which made returns to Government, not more than 99 possessed reliable registers, the rest having only irregular and occasional entries.

To the negligence of session clerks and clergymen there was added as a deterrent to regular registration the drawback of a small fee for recording a birth, very commonly one shilling. Dissenters declined to register generally, even when registration was offered *gratis*; and after the disruption of 1843 there was a falling-off in the number of births recorded in the old parochial registers.

It may be mentioned here that records were kept by Episcopalians and others; and that extracts from such registers, and from Free Church records of baptisms, are admissible as evidence, such registers being kept in most cases with care and regularity, and their validity being unimpaired by the passing of the Registration Act, which, indeed, provides expressly (sec. 1) that all extracts and certificates from such registers shall be in no wise affected in their legal force by the passing of that Act. In this connection it is noticeable that, by 3 and 4 Vic., c. 92, the non-parochial registers in England, amounting to about 7,000 volumes, are also receivable as evidence.

A stamp duty of threepence upon every entry, imposed in 1783 by 23 Geo. III, c. 67, was even more unpopular in Scotland than in England. It was repealed eleven years after its enactment, and it contributed considerably to the imperfect condition of the old parochial registers. Clergymen and other authorised keepers of records had to collect the duty—which Scotland took care should in her case be a minimum.

Various reasons thus operated against complete registration in the pre-compulsory period; but, undoubtedly, the greatest was the absence of general inspection and superintendence, such as is in operation to-day in the form of five registration examiners, who visit annually every registration district in Scotland for the purpose of inspecting each year's work; and, to a large extent, the old system owed, therefore, its unsatisfactory results to the omission to act upon the wisdom contained in the query framed by the ancient rulers and masters of the world—*quis custodiet ipsos custodes?*

III.

Early efforts towards a complete system of registration met with, however, some measure of success; and we are in a position to give some reply to the inquiries on the subject, which, when summarised, resolve generally into the question: What proportion of births were recorded before the introduction of compulsory registration?

It appears fairly reasonable to estimate the number at about 46 per cent. The proportion is not uniform—actually decreasing, probably for the reason referred to in a later paragraph of this note, towards 1850, as is suggested by the following figures:—

	Births Registered.		Population at Census.
1842	36,158	1841	2,620,184
’50	26,780	’51	2,888,742

The old registers differ very much in value. Some are well kept—such as that of Edinburgh, from which Boswell's birth entry has been quoted above. Edinburgh has 70 volumes; the parish of St. Cuthbert, Edinburgh, has about 60; and the other parish of the Scottish capital, Canongate, has 25, one of which contains entries recording the deaths of Riccio and Darnley. Altogether the old parochial registers extend to several thousand volumes; and their faded pages are brown with age and most varied in style.

Owing to the general absence of indexes and of proper arrangement in their contents, they are not, for the most part, easy to search. Indexes, indeed, have been prepared for the larger parishes, but the greater number are without such aids to ready reference.

The deficiencies in point of number may be surmised for all the country from the figures relating to the three counties selected as fairly representative of the Lowland, Midland and Highland districts into which Scotland is divided. And the following table also shows that the birth registration (making a reasonable allowance for the probable number of deaths) was not adequate to produce the intercensal increase indicated, in the three counties selected: Linlithgow and Sutherland with 13 parishes each, and Dumfries with 43 parishes:—

County		Dumfries.		Linlithgow.		Sutherland.	
Population at census of 1841 ...		72,830		26,872		24,782	
Population at census of 1851		78,123		30,135		25,739	
Registered		Births.	Marriages.	Births.	Marriages	Births.	Marriages.
Returned for the year	1842 ...	1,045	369	350	175	470	134
	’43...	1,016	339	282	176	390	116
	’44 .	751	395	262	194	190	141
	’45....	908	406	245	260	185	149
	’46....	899	482	279	263	124	149
	’47....	862	463	186	244	100	138
	’48....	829	488	177	243	88	155
	’49...	930	516	203	220	78	129
	’50....	860	498	209	291	74	131
Average for nine years		900	439	243	229	188	138

Deaths have not been entered in the table, as in six of the nine years deaths are returned under only one of the 13 parishes in Sutherlandshire, and in the other three years under only 2 parishes. From 21 of the parishes of Dumfries no returns were received. In the case of Linlithgow the deaths registered fluctuated between 180 and 391, while the average was 272, the average for Sutherland being 23 and for Dumfries 517.

Especially after the year of the disruption (1843) a decrease appears in the births recorded in the parish registers, the fall in the number recorded in Sutherland, a stronghold of the free church, being very striking. One may calculate the number of children born annually in Sutherland at 700, in Linlithgow 950, rising in later years to nearly 1,100, and in Dumfries from 2,200 to 2,400, these calculations being based on the census populations and the birth-rate prevailing in the counties of the various types in the early years of registration; Dumfries and Sutherland being taken as counties of the mainland-rural type, and Linlithgow as a county of the small-town type. Such figures suggest that the record of births during the period was increasingly defective. The numbers obtained are in general confirmed by a calculation based on the number of marriages, and the average fertility of marriage, but the number of marriages registered in Linlithgow show considerable fluctuations, and one is on safer ground here in dealing only with the census populations and the birth-rate. The birth-rate for a county of this type may be taken at 36 per 1,000; then

$$26{,}872 \times \frac{36}{1{,}000} = 967\ ;\ \text{and}\ 30{,}135 \times \frac{36}{1{,}000} = 1{,}084.$$

The recording of marriages (proclamations of banns) appears to have been almost complete in the three counties. The fragmentary character of the information as to deaths, and the imperfect recording of the births, revealed the failure of the ecclesiastical system, which was superseded in 1855 by the present compulsory civil system of recording all births, deaths and marriages in Scotland.

IV.—*Agricultural Returns of Great Britain*, 1909.

PRELIMINARY statement for 1909, compiled from the returns collected on the 4th June; and comparison with 1908:—

CROPS.

Distribution.	1909.	1908.	Increase.		Decrease.	
	Acres.	Acres.	Acres.	Per cnt.	Acres.	Per cnt.
Total area (excluding water)	56,211,830	56,211,830	—	—	—	—
Total acreage under all crops and grass*	32,183,073	32,211,386	—	—	28,313	0·1
Arable land	14,730,668	14,795,517	—	—	64,849	0·4
Permanent grass—*						
For hay	4,777,559	4,949,791	—	—	172,232	3·5
Not for hay	12,674,846	12,466,078	208,768	1·7	—	—
Total	17,452,405	17,415,869	36,536	0·2	—	—
Wheat	1,823,563	1,626,733	196,830	12·1	—	—
Barley	1,664,394	1,667,437	—	—	3,043	0·2
Oats	2,981,789	3,108,918	—	—	127,129	4·1
Rye	55,566	52,744	2,822	5·4	—	—
Beans	313,864	295,024	18,840	6·4	—	—
Peas	183,910	163,739	20,171	12·3	—	—
Buckwheat	4,759	5,132	—	—	373	7·3
Potatoes	575,461	562,105	13,356	2·4	—	—
Turnips and swedes	1,555,542	1,550,897	4,645	0·3	—	—
Mangold	456,496	427,772	28,724	6·7	—	—
Cabbage	66,854	69,120	—	—	2,266	3·3
Kohl-rabi	17,734	17,252	482	2·8	—	—
Rape	87,443	86,495	948	1·1	—	—
Vetches or tares	136,245	126,083	10,162	8·1	—	—
Lucerne	65,327	65,156	171	0·3	—	—
Carrots	11,226	9,922	1,304	13·1	—	—
Onions	3,823	3,357	466	13·9	—	—
Flax	295	286	9	3·1	—	—
Hops	32,539	38,921	—	—	6,382	16·4
Small fruit	87,116	84,880	2,236	2·6	—	—
Clover and rotation grasses—						
For hay	2,035,827	2,232,353	—	—	196,526	8·8
Not for hay	2,178,763	2,189,234	—	—	10,471	0·5
Total	4,214,590	4,421,587	—	—	206,997	4·7
Other crops	102,991	96,705	6,286	6·5	—	—
Bare fallow	289,141	315,252	—	—	26,111	8·3
Orchards†	251,336	250,297	1,039	0·4	—	—

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* Excluding mountain and heath land used for grazing (12,843,272 acres in 1909).

† Any crop or grass grown in orchards is also returned under its proper heading.

LIVE STOCK.

Distribution.	1909.	1908.	Increase.		Decrease.	
	No.	No.	No.	Per cnt.	No.	Per cnt.
Horses used for agricultural purposes*	1,132,014	1,119,324	12,690	1·1	—	—
Unbroken horses—						
1 year and above	294,657	299,809	—	—	5,152	1·7
Under 1 year	126,332	126,538	—	—	216	0·2
Total of horses....	1,552,993	1,545,671	7,322	0·5	—	—
Cows and heifers—						
In milk	2,232,218	2,197,763	34,455	1·6	—	—
In calf but not in milk	561,958	566,017	—	—	4,059	0·7
Other cattle—						
2 years and above	1,317,215	1,371,688	—	—	54,473	4·0
1 year and under 2	1,473 918	1,415,483	58,435	4·1	—	—
Under 1 year	1,435,673	1,354,183	81,490	6 0	—	—
Total of cattle	7,020,982	6,905,134	115,848	1·7	—	—
Ewes kept for breeding	10,810,476	10,569,089	241,387	2·3	—	—
Other sheep—						
1 year and above	5,860,907	5,632,767	228,140	4·1	—	—
Under 1 year	10,947,036	10,917,874	29,162	0·3	—	—
Total of sheep	27,618,419	27,119,730	498,689	1·8	—	—
Sows kept for breeding	316,552	369,476	—	—	52,924	14·3
Other pigs	2,064,335	2,454,006	—	—	389,671	15·9
Total of pigs	2,380,887	2,823,482	—	—	442,595	15·7

* Including mares kept for breeding.

BOARD OF AGRICULTURE AND FISHERIES,
20th September, 1909.

NOTES ON ECONOMIC AND STATISTICAL WORKS.

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1.—*The theory of the construction of tables of mortality.* By G. F. Hardy. Published for the Institute of Actuaries by C. and E. Layton. 142 pp., 8vo. London, 1909.

The publication of the lectures delivered during the winter 1904-05 at the Institute of Actuaries was delayed, as Mr. Hardy intended to expand them into a complete treatment of the subject. Unfortunately he has not found time to do this, and the lectures now appear substantially as they were delivered, with a few additional notes.

Broadly speaking, the lectures dealt with graduation, and did not touch on the general question of how the data are obtained from the crude material. This omission, though clearly wise for Mr. Hardy's audience, makes the lectures appear to start at a rather advanced stage; and in many other cases the non-actuarial statistician will have difficulty over technical terms and methods. He will, however, find Mr. Hardy's notes of the various methods of graduations in the second lecture interesting, and will notice that Mr. Hardy refers to the point, which the older actuaries ignored in graduating, that if there is a large number exposed to risk at any age there will in consequence be a large number of deaths at that age. If the exposed and deaths are graduated separately this correlation is ignored, and one should therefore, after graduating the exposed, find a new series of deaths by multiplying the graduated exposed by the raw rates of mortality.

The notes on the Pearson-type curves are somewhat incomplete, and are marred by a not altogether satisfactory renumbering of the types, which will only tend to confuse a student trying to read original papers in other publications.

Mr. Hardy is most interesting when he is discussing the application of Makeham's hypothesis to a mortality table and giving accounts of his own researches and methods. His graduation of the British Offices' select tables shows a tremendous advance on anything that has been done before in this direction, and should stimulate further work on the subject.

There are many miscellaneous notes of interest, especially in the final lecture, but so technical a book will naturally appeal mainly to actuarial readers.

2.—*Die Entwicklung der Reichsfinanzen.* By Dr. R. van der Borght. 170 pp., 12mo. Leipzig: G. J. Goschen'sche Verlagshandlung, 1908.

In Germany, as in the United Kingdom, the re-organisation of the national finances has been the dominant subject of political interest during the present year; and this little book by the Director of the Imperial Statistical Office forms a useful guide to the nature and extent of the problem which has already dissolved a great parliamentary combination and overthrown a Chancellor. The book is primarily an extremely lucid statistical study of the development of Imperial expenditure, revenue and debt; but it also contains much detailed information as to forms of taxation, and considerable criticism of the principles and methods of German financial administration; and it brings into clear light some of the causes of the desperate condition into which the Imperial finances had been brought by the year 1908.

Valuable as the book is in many respects, it has, however, one serious defect. It is in essence (though not avowedly) a study of an increase of expenditure which is regarded as inevitable and beneficial, and a plea for the provision of new sources of revenue and the development of those already in existence; but, possibly owing to limitations of space in the series to which this volume belongs, Dr. van der Borght has confined his attention solely to the *Imperial* finances. Consequently, his book fails to indicate the full extent of the problem. In a federation, where important branches of administration remain entirely in the hands of the Governments of the constituent States, and especially where the financial relations between the Federal and State Governments are as complex as they are in the German Empire, it is impossible in practice to isolate either Federal or State finance. A consideration of the growth of Imperial expenditure in Germany, and of the necessity of new revenue to meet it, cannot be adequate unless it takes into account the contemporary growth of expenditure by the State Governments. We would gladly have dispensed with some part of the minute information (interesting as it is) given as to certain branches of expenditure (especially in pp. 68—90, dealing with salaries and the so-called Imperial Invalidity Fund), if Dr. van der Borght could have given us in its place some estimate and analysis of the whole governmental expenditure and revenue of Germany, and had not limited his narrative simply to the Empire. It may be pointed out, to emphasise the importance of this, that in the memorandum issued by the Imperial Ministry of Finance for the information of the Reichstag during the recent debates, the *gross* expenditure, *i.e.*, including outlay on trading enterprises such as railways and mines, of the Empire is estimated for 1907 at 121·1 million £s, and that of the States at 389 million £s; whilst the *net* expenditures are estimated at 75·1 and 88·7 million £s respectively.

A further criticism which may be made relates to the discussion of revenue, and particularly of that part thereof which is derived from customs and excise duties. Some statistics are given of the growth of customs revenue, and of its proportion to the value of imported goods, but there is no consideration of the extent to which the growth in revenue is due to tariff changes, or to the increased yield of the customs per head of population, though the figures are given in the *Statistisches Jahrbuch für das Deutsche Reich*, and *per capita* figures of the yield of the tobacco duty are given on p. 116 of the present work. The yield of the customs duties and the difficulty of replacing it from any other source of revenue is emphasised (apparently to the intended confusion of such free traders as there may be in Germany); but no reference is made to the fact that a large part—certainly not less than four-fifths—of this revenue is obtained by the taxation of what can only be regarded as food and raw materials. The protection of manufactures has become of little use to Germany as a means of raising revenue; protection for agriculture has benefited mainly the large landowners of the Eastern Provinces, who have now overthrown the Government scheme of financial reform by their refusal to take what even the German Government deems their due share of the national burdens. With the failure of the customs and excise revenues, even with the increased rates of duty, to develop with anything like the rapidity of expenditure, the Empire seems bound before long to adopt schemes of direct taxation, hitherto the preserve of the States.

Despite these criticisms, and others which might be made, Dr. van der Borght has produced, within the limits which he has set for himself, a very interesting and instructive work. Few students of German finance will disagree with what appears to be his main conclusion, that the fundamental cause of the whole confusion has been the unfortunate arrangement of the matricular contributions from the States and the "*Ueberweisungen*" from the Empire to the States under the Franckenstein clause of 1879. The arrangement under which the yield of the customs and certain Imperial excise duties in excess of 6½ million £s was to be distributed by the Empire between the constituent States, which in their turn were to contribute to the Empire any sum which might be required to balance its revenue and expenditure, introduced at once much confusion into the accounts of both parties, and was the cause of grave difficulty later. For about two decades the States received more than they paid; after that they were called on to pay more than they received, and the difference grew constantly greater. They thus lost revenue on which they had counted, and were faced with increased expenditure which they had not anticipated. Their own finances were thrown into confusion, and they incurred a debt towards the Empire which the smaller States, at least, could not discharge—it has now been turned into an Imperial debt. The policy which took from the Empire the control of revenues specifically assigned to it by the constitution was adopted admittedly on political grounds and brought confusion in its train; and political considerations have also, until this last year, deterred the Government from dealing boldly with a problem which courageous statesmanship could have solved long ago.

One result of this policy has been the piling up of the Imperial Debt. The Empire was bound to hand over a large part of its own revenues to the constituent States, and did not venture at any time to call for matricular contributions equal to its requirements. So debt accumulated rapidly; in 1886 it was 22 million £s, in 1896 106 million £s, in 1901 120 million £s, and in 1908 (1st October) 213 million £s. There has been a further increase since. In twelve years of peace (save for the Chinese expedition and the native rising in South-west Africa, which together cost out of loans some 33 million £s) the Imperial Debt was more than doubled. Practically the whole of this debt (differing in this respect from the bulk of the State debts) has been incurred for unremunerative purposes; and it is a remarkable commentary on German financial administration that there has been practically no debt redemption of any kind since about 1880 (the provisions made in 1906 could not be carried out); that up to 1889-90 there was no distinction in the accounts between "ordinary" and "extraordinary" expenditure; and that until 1901 there were no recognised principles as to what should and what should not be charged to capital account. Dr. van der Borght rightly emphasises the effect upon the market for German Government loans of this loose administration and the piling-up of debt; and apparently he would share the opinion of other critics, that the great demand for Imperial, State and local loans in Germany during the last few years has both diminished the supply of capital available for industrial purposes at home, thereby raising the rate of interest, and limited her power of investment abroad. This latter effect, it may be remarked, was to the advantage of England, which began to be able to lend abroad freely after the end of the South African war, just as German capital began to be absorbed by internal loans.

We trust that the present work may soon be followed by a larger one which will deal with the whole question of Imperial and State finance, and in giving some account of the recent reforms may tell us how far they have remedied the two defects on which Dr. van der Borght lays so much stress—the unsound relations between the Imperial and State finances, and the failure to check the development, and provide for the reduction, of the National Debt. P.A.

3.—*Les Riches depuis sept cent ans.* Par le Vicomte G. d'Avenel. 387 pp., 18mo. Paris: Librairie Armand Colin, 1909. Price 4 francs.

In this volume we have a further study of the variations of wealth and of income in France by the writer who has become so well known as an exponent of the statistics of prices and of incomes. The object of the volume is to present the relative condition at different times of those who are more wealthy than the average of the population. The outcome of the investigations to which the Vicomte d'Avenel has devoted his energies is that, relatively, there are more who possess exceptional wealth in our time than in preceding ages, and that, though the general welfare of the entire population has greatly increased, the contrast between the condition of the average family and that of the richest classes is more marked than formerly. The author has no belief in the desirability, or the possibility in an advancing community, of equalising the economic conditions of all classes. He urges rather that progress involves the development of greater inequality between those of ordinary condition and the leaders.

In a series of interesting chapters the nature and amount of the incomes of different professions are studied—the military, the legal, the medical, the clerical, the scholastic, the artistic, and the literary professions being each the subject of a careful examination, in which there is found opportunity for giving many illuminating details of the kind of service rendered and the relations of classes, as well as for setting forth the actual figures in which incomes and payments, legacies and dowries and ransoms, illustrate the financial status of the persons dealt with. Into these details it would be impossible to enter here. A point of very great importance, however, which forms the subject of the earlier chapters of the book, is the nature of the investments open to those who possessed accumulated funds in former times, as contrasted with modern conditions. The details are worth careful study. Broadly, the result is that the principal modes available for investing wealth so as to yield a revenue in past centuries were such as might be described as the purchase of means of acquisition rather than means of production: the right to exercise some public office of profit, for example, rather than the establishment of some industrial enterprise. The relatively larger fortunes of modern times are the result of developments which are beneficial, not merely to the owners of these fortunes, but to the communities in which they live, whose welfare has been increased as the wealth of the richer classes has grown. With such conclusions our author expresses with much emphasis the opinion that the modern growth of large fortunes is quite otherwise than injurious to the masses.

In all the comparisons of different ages the amounts of income or of capital possessed by individuals are expressed in their equivalent in modern money, on the basis of the relative purchasing power of money at different times as determined by M. d'Avenel in his earlier investigations. The ordinary reader is thus relieved of the necessity of considering the changes in the value of money through the centuries over which the survey extends. But it need hardly be remarked that the apparent precision thus given to the comparisons is far greater than the available data, speaking strictly, can justify. The use of one and the same coefficient to express the differences in the purchasing power of money for the members of the different professions whose condition is discussed in the several chapters would hardly be entirely justified if the knowledge of prices on which the coefficients are based were far more complete than is actually the case. For the purpose of a general description the procedure is useful, but general descriptive writing, it must not be forgotten, differs a good deal from scientific statistical analysis. We know that the Vicomte d'Avenel is capable of the latter, but it is rather the former which is presented in the volume before us. Nevertheless, there is more than mere general description embodied in such phrases as that with which the book opens:—"The very wealthy of our day are six times richer, or, comparing the possessors of equal wealth, twelve times more numerous than the richest of the *ancien régime;* they are ten times richer, or twenty times more numerous than the wealthiest princes of feudal times." A.W.F.

4.—*Salariat et Salaires.* Par E. Levasseur. xvi + 484 pp., sm. 8vo. Paris: Octave Doin et Fils, 1909. Price 5 frs.

This little volume is one of a "Library of Political Economy," which itself forms a part of a "Scientific Encyclopædia" now being issued in France. Professor Bellet, the editor of the Economic section of the Encyclopædia, remarks in a general introduction, that the necessary inclusion of Political Economy in the comprehensive plan conceived for so considerable an enterprise has resulted in the appropriation of forty volumes of the whole series to economic questions. The writers include some other distinguished names; but no step perhaps could have been taken which was more likely to insure the successful performance of this portion of the new undertaking than to enlist the services of the veteran author, whose name appears on the title page of the present book, for the treatment of the particular subject here discussed.

M. Levasseur observes indeed in his special preface that he himself had previously handled in detail the theoretical and practical problems which must arise in connection with wages and with the wage-relation. The book before us is, in fact, an abridgment, necessarily expressed with more positive assurance and less frequent reservation, of the views stated before at length and supported by explicit reasoning in several chapters of his well-known larger work on the industrial conditions of his country under the regime of the Third Republic, which was reviewed in a recent number of this *Journal.* His object is, as he remarks, to illuminate opinion, and to dispel unconscious prejudice or systematic error, by the exhibition of facts and by the discussion of ideas, without multiplying unduly the illustrative instances adduced, or compelling the reader to consult continually and directly the original authorities for the information furnished and the conclusions emphasised.

In the first three chapters of the work the wage-relation itself is carefully defined, the general causes which determine the rate of wages are set forth, and the special influence exerted by machinery on their amount is investigated. The ten chapters which follow are devoted to a study of the rate and fluctuations of wages, and of the means of existence of the working class. These chapters are succeeded by six more, in which the conflicts between wage-payers and wage-receivers, the laws which regulate their relations to each other, and the arrangements and the institutions fitted for the improvement or the alteration of the status of the workmen, are discussed. In the twentieth chapter of the book the criticism passed upon the wage-relation by the socialists is considered, and in the final chapter, which follows, a summary of the previous portions of the book is accompanied by a glance at the probabilities of the future.

This brief sketch of the contents of the volume will show that M. Levasseur has, within the limits necessarily imposed upon him by the size and purpose of this essay, brought to bear upon the treatment of his subject the qualities with which readers of his previous writings are familiar. His vast stores of accurate erudition are placed, here as before, conveniently at their disposal. His power of lucid exposition has not lost its cunning with the lapse of years; and the candour and impartiality of his judgment are now, as they have always been, conspicuous in his brief but adequate statement of the conflicting views expressed by authors of repute on the main controverted points. So far as the theory of the subject is concerned it is, as he remarks, universal in its nature, and its results accordingly apply in common to all the civilised countries of the world; the practice on the other hand is in the main regarded and presented in this book with special reference to French conditions, but the treatment is supplemented, where occasion prompts or need demands, by comparisons drawn from foreign lands. Of both sources of information it is almost gratuitous to say in conclusion that M. Levasseur possesses an adequate command; and we do not know whether we should admire more the completeness of his knowledge or the easy mastery with which he employs it for the profitable instruction of his readers. L.L.P.

5.—*Handbuch des Wohnungswesens und der Wohnungsfrage.* Von Professor Dr. Rud. Eberstadt. viii + 412 pp., 8vo. Jena: Gustav Fischer, 1909. Price 9*s.*

This book contains an attempt to study the housing of the people as a branch of social economics, not only or even mainly what we in England are accustomed to call the "housing question" or the "housing problem," but the history and method of housing in general upon principles analogous to those upon which scientific investigations into other spheres of man in society are conducted. It treats of the normal housing of the main body of the population (primarily of Germany), avoiding the extremes of the upper and lower classes. It starts with an historical introduction, carrying the reader cursorily from the building plans and regulations of ancient cities through the Middle Ages to modern times. The plans of cities and sections and elevations of houses given are exceedingly interesting.

The second part, perhaps the most interesting to English readers, deals with the factors that go to the making of urban site values. The author urges the importance of a clear separation in thought between the natural and the voluntary or artificial influences. Voluntary action on the part of men not themselves urged by primary human necessities has played an enormous part in urban land development. The author emphasises the importance of building speculation in urban development. A market for dwellings could not exist unless building was carried out as a speculation. This section of the book contains various examples of the increase in the value of land in German cities. The following is cited as a typical case from a South-German city (name not given), p. 99:—In 1887 a capitalist purchased a parcel of land at 1·25 marks the square metre. In 1896, at his death, the property was valued for probate at 8·10 marks. In 1900 it was transferred to a company at 20·95 marks. The company spent 7·75 marks per square metre upon laying out streets, and in 1902 (5th October) sold the rest to a "building-sites merchant" (Baustellenhändler) at 43 marks. In 1903 (2nd August) the latter sold it to a speculator (Gelegenheitshändler) at 65 marks. In 1904 (1st February) the latter sold it to a builder at 70 marks the square metre (= about 6*s.* 6*d.* the square foot).

The third part of the volume deals with housing statistics. It touches upon various aspects of the question that are not usually dealt with in English treatises upon the subject. Tables are given showing the cost of building sites, the area of land owned by town councils, the area of parks and open spaces owned by the State, the municipality and private bodies and persons respectively, the number of inhabitants per building, the number of tenements per site, the proportions of population dwelling on each floor, the proportions of population dwelling in tenements of less than three rooms, the rents of dwellings, the proportions of income spent upon rent, &c., &c. Most of these statistics are given for a dozen or more great German cities.

A few figures will be interesting. Berlin in 1903 owned 587 hectares (say 1,450 acres) of land within the city bounds and 15,290 hectares (say 38,000 acres) outside the city bounds. Frankfurt-am-Main, a much smaller city, owned 4,199 hectares (say 10,000 acres) within and 355 hectares (say 860 acres) without; while Görlitz, a much smaller city in Prussian Silesia, owned 168 hectares within and 30,936 hectares (say 76,000 acres, or nearly 120 square miles) without. These are surprising figures judged by English standards. The case of Görlitz, a textile town of 60,000 inhabitants on the banks of the Neisse, is unique. It is unfortunate that comparable figures cannot be obtained for London and other large English towns.

In our next item of statistics the comparison can be made. Within the city bounds of Berlin there are 469 hectares (say

1,160 acres) of parks and open spaces above 5 ares (say $\frac{1}{8}$ of an acre) in area. Of this area 291 hectares (say 720 acres) belong to the State and 178 hectares (say 440 acres) to the municipality. In London there are 6,588 acres of parks and open spaces maintained (and, with a few small exceptions, owned) by public authorities, viz., 1,893 by the Government and 4,284 by the London County Council, the City Corporation, and the metropolitan borough councils.

The population per house in great German cities ranges (1905) from 77·54 in Berlin to 7·96 in Bremen. Intermediate figures are: Breslau, 51·97; Hamburg, 36·81; Munich, 36·53; Dresden, 27·69; Leipzig, 27·64; Cologne, 16·41. The average population per house in the administrative county of London in 1901 was 7·41. No point of statistical contrast between the methods of housing in two capital cities such as London and Berlin could be greater than this, and it is noteworthy that the number of tenements and inhabitants per site in Berlin has been steadily on the increase during the last thirty years.

The average yearly rent (in 1900) of a tenement in Berlin with one room with a stove was 232 marks; of a tenement with two rooms with stoves, 379 marks (say 4*s*. 6*d*. and 7*s*. 3*d*. per week respectively). No average rents can be given for London tenements.

The next four sections of the volume deal respectively with the laying out of towns, the planning of streets, the forms of buildings, &c.; the financial aspects of house-building, mortgages, and taxation; the movement of the population; and the building activities of individuals and corporations not influenced by the market, *e.g.*, the work done by the Empire, the States, the municipalities, societies, firms, &c.

Finally, the eighth section deals with foreign countries; with England (at some length), and very briefly with Austria-Hungary, Switzerland, France, Belgium, the Netherlands, Denmark, Sweden, Norway, and North America.

Each section of the volume, and occasionally individual chapters of sections, conclude with bibliographies.

The above survey will serve to show the elaborateness of the inquiry. It is a scientific investigation into the actual facts of the housing of the German people in great cities, the causes that underlie these facts, the forces that are modifying them. The book contains no general thesis. P.E.B.

6.—*Les expropriations et le prix des terrains à Paris* (1860-1900). Par Maurice Halbwachs. 416 pp., 8vo. Paris: Publications de la Société Nouvelle de Librairie et d'Edition. 1909. Price 8 frs.

At a time when the complete valuation of the land of the United Kingdom is under discussion, the publication of this volume, dealing statistically with the values of land in Paris, is particularly welcome. But although land value is the principal subject dealt with by M. Halbwachs, other related subjects are also discussed. The compilation of the tabular matter leaves something to be desired, and the reader is too often referred to other publications for the material on which statistical conclusions are based. The movements of population are shown, by "arrondissements" and by "quartiers," in quinquennial periods from 1861 to 1901, except that the figures for 1871 are missing. But the actual figures of population are not given, the population of each area being represented by an index number of 100 in 1861 and the increase or decrease by relative numbers. These comparisons indicate a strong centrifugal movement of Parisian population. The first four "arrondissements," forming the centre of Paris, show a decrease of 17½ per cent. in the forty years, while the sixteenth "arrondissement" (comprising Auteuil and Passy) shows an increase of 218 per cent. in the same period. In the "quartiers," the extremes are naturally greater. A comparison is also made of the populations of the old "quartiers," existing before 1860, for the quinquennial periods from 1836 to 1856 inclusive, and from this it appears that the falling off in the central districts dates back to quite early in the nineteenth century.

A short account is given in chapter I of all the principal improvements carried out between 1846 and 1900, including the magnificent reconstructions of Baron Haussmann. The effect of these improvements on street traffic and in displacing population is also discussed in this chapter, but unfortunately no attempt has been made to indicate the improvements themselves, by colour or otherwise, on either of the maps attached to the volume. The demolition of old buildings and the erection of new are the next points of interest, and they are discussed in relation to the compulsory acquisition of property for improvements. From 1852 to 1857, in the days of the Third Empire, we find no less than 59 per cent. of the demolished houses were removed in connection with improvements. A complete table is given of the number of compulsory purchases in each "arrondissement" for each year from 1860 to 1899, and a similar one shows the percentage of houses built or added to from 1862 to 1889, the local conditions of each "arrondissement" being separately discussed.

The reader is introduced to the study of Parisian land values by an able preliminary disquisition on the relation between buildings and their sites, in the course of which M. Halbwachs reaches the sound conclusion that local conditions, rather than the character of the buildings upon them, determine the value of sites, and that this applies equally to all sites, whether built on or not. He then presents a valuable table, giving the average price per *mètre carrée* and area of the uncovered land sold, in each year from 1860 to 1907, for 13 out of the 20 "arrondissements," comparing the price per metre by means of index numbers. These comparisons are limited, for obvious reasons, to districts of similar local conditions, and for this purpose the area dealt with is sub-divided into seven districts. The highest average price was 2,800 frs. per metre in 1891, but it related to a very small area. In a second table M. Halbwachs brings together in comparative form the area of land sold, the total prices, the prices per metre, the number of compulsory purchases and the amount of compensation paid, the number of new buildings, index numbers of the prices of goods, and the actual receipts of the railways. All these figures are given for each year from 1860 to 1907, and present a wide field for investigation or theory-building. By means of a graphic diagram M. Halbwachs succeeds in establishing a direct general relation between the average price of land per metre and the railway receipts, a result naturally expected by all who are acquainted with the large part played by railways in the development of land. The curve of price of commodities, on the other hand, appears to bear an inverse relation to the land value curve, and thus lends support to the view that the cheapness of things produced increases the value of land. This conclusion is, however, somewhat weakened by the use of the mean prices of commodities throughout France instead of those relating to Paris only. In his other curve comparisons M. Halbwachs is less happy. He attempts to establish a certain amount of correspondence between the land value curve for his entire area and similar curves for different localities; also between the quantity of land sold and the price per metre. In both respects he is unconvincing, mainly because he is dealing with results derived from a variety of causes acting variously at various times. To do him justice, it must be admitted that no conclusions from these assumed correspondences are insisted upon, while the difficulties in the way of forming deductions are pointed out with true statistical caution.

A special chapter is devoted to the effect of compulsory purchases upon the land market. In addition to their obvious effect of increasing land prices, other results of improvements and clearances require consideration, such as the changes made in local conditions by the formation of a new street and the temporary increase in the amount of available land, when the surplus sites are offered for sale. These results, in some periods and localities, appear to have been sufficient to counteract the first effect of price raising.

In a final chapter, devoted to theoretical conclusions, the discontinuous nature of the variations in land value is well brought out. The causes of these variations are not fully dealt with, the argument being confined for the most part to compulsory purchases and clearances, the operations of land speculators, and the relations between owners and tenants. But it would be just as unreasonable to expect a statistician to deal completely with the practical aspect of land valuation as to require an expert valuer to base his valuations entirely upon statistical data. Interesting and valuable as this investigation proves itself, its limitation to uncovered land prices is a most serious drawback. But, even had it been possible to disentangle land values from all the far more numerous prices obtained for built-up property, and to include them in a statistical investigation, it would have remained just as impossible to apply the results to the practice of land valuation. For statistics of the past, in this matter, can be no reliable guide to the individual facts of the future. Their importance is derived from the accuracy with which they trace the building-up of existing conditions out of an otherwise inscrutable past. E.J.H.

7.—*The standard of living among working men's families in New York city.* By Robert C. Chapin, Ph.D. xv + 372 pp., 8vo. New York: Charities Publication Committee, 1909.

The publication of this valuable addition to the statistics of the cost of living to the working classes is due, first to a committee of the Seventh New York State Conference of Charities and Correction, and secondly to the Russell Sage Foundation, which defrayed the cost of the work outside the voluntary efforts of the statisticians engaged upon it. The committee first drew up a most comprehensive form of schedule, evidently aiming to secure returns which should be complete and accurate rather than numerous. It is admitted that the complexity of this schedule discouraged many, but those who persevered in spite of discouragements have furnished the material for one of the best statistical analyses of the cost of living yet published. It is not claimed that the schedules are representative of all working class families in New York city, but the work bears strong internal evidence that the facts and figures upon which the tables are based are substantially accurate. Out of a large number of schedules issued only 642 were returned filled up—a highly satisfactory result in view of the minute and numerous questions to be answered. Close examination of these returns led to the rejection of 251 of them, and the statistical analysis is based on the remaining 391 schedules. A preliminary report (presented to the Conference in 1907) is printed as an appendix, but the statistical tables have been compiled, and the full report written, by Professor Robert Coit Chapin, of Beloit College, Wisconsin, who acted as secretary to the committee.

All the families dealt with had not less than 4 nor more than 6 members, and 318 of them enjoyed incomes varying from 600 to 1,100 dollars. There were 25 with incomes below 600 dollars, and 48 with incomes above 1,100. The principal bases of enumeration are income, expenditure, nationality, and employment, and many of the tables are worked out on the twofold basis of (*a*) total family income and (*b*) income of father only. New York naturally affords scope for comparisons by nationality, and only 88 of the fathers are American by birth. Next in order come the Russians (78), Italians (69), Teutonic nations, including Britain (46), Austro-Hungarians (39), coloured races (29), Irish (26), and Bohemians (14). The occupations represented are mainly those of the less skilled employments, with wages from 2 to 3 dollars per day. According to the employment of the father, 189 were engaged in manufactures and mechanical trades, 96 in domestic and personal service, 53 in transportation, 47 in trade, and 6 in professional service. Labourers (38), teamsters (30), and garment workers (66), make up one-third of the total.

In order to discover on what income a family may meet the demands of a normal standard, general averages have been for the most part avoided, and averages and percentages calculated with reference to each income-group and nationality respectively. In some cases, separate results are given for each of the boroughs in Greater New York, notably in regard to house rent, a most important and necessary subdivision. The tables in the chapter on

"Sources of Income" have been very carefully compiled, and among many other striking results there emerges the fact that while 79·4 per cent. of the Russian families take lodgers, less than 6 per cent. of the Irish families do so. But the most interesting chapter to British readers is that on "Objects of Expenditure," including sections on housing, food, clothing, fuel and light, car-fare, &c. The apportionment of expenditure between the different heads is shown in two simple but comprehensive graphic diagrams, from which it is clear that the smaller the income the greater is the percentage of expenditure claimed by rent. The extreme care bestowed upon details is well illustrated by the number of tables (seven in all) devoted to the analysis of the number of rooms per family, in addition to five others dealing with bath rooms and dark rooms. The standard adopted for computing overcrowding is 1½ persons per room, as compared with 2 per room commonly adopted for statistical purposes in this country. According to this higher standard 50 per cent. of the families were living in overcrowded conditions, the largest proportion being found among the Bohemians in Manhattan (79 per cent.). Most interesting figures are given in relation to "underfed" and "underclad" families, the standards used being very fully and carefully explained. The figures of the food budgets are especially valuable, as they are given in such detail that comparisons with similar figures for other countries are rendered easy and reliable. Expenditure on doctors and medicine, insurance, furniture, recreation and amusement is also given, though not always in the same minute detail; and there is a comprehensive table bringing together the families underfed, underclothed and overcrowded, and followed by figures of pawning and other methods of borrowing.

While it is impossible within these limits to describe all the manifold results of this most thorough investigation, enough has probably been said to indicate the great usefulness of this volume to all investigators in similar fields. The appendix contains—in addition to the preliminary report already mentioned—a report from nine cities and towns outside New York; a report on the standard of living in Buffalo, and a translation of a working man's budget in 1857, taken from Le Play's well-known treatise on *Les Ouvriers Européens*. To those desirous of covering the entire field of investigation, Professor Chapin's prefatory monograph on "Working Men's Budgets in Statistical Literature" is particularly commended. Not less valuable, perhaps, is the appended bibliography (which he modestly terms a partial one) of works on the general subject of working men's budgets and the standard of living.

E.J.H.

8.—*The Industrial System: an Inquiry into Earned and Unearned Income.* By J. A. Hobson. xx + 328 pp., 8vo. London: Longmans, Green and Co., 1909. Price 7*s.* 6*d.* net.

The theme which Mr. Hobson here expounds is of more than passing interest; but it is now especially opportune. For his refined, elaborate, ingenious argument is not irrelevant to recent innovations, accomplished or proposed, in English national finance;

and he himself is conscious, for example, of the special use to which his reasonings may, and will, be put in support of the fresh taxes upon land contained in the Budget of 1909.

A candid survey of the detailed exposition of his book might indeed, we think, conduce to a hostile rather than a favourable judgment of the actual fiscal scheme propounded by the Chancellor of the Exchequer. Or, if this definite result were not attained, an attitude of hesitation and reserve might at any rate be suggested. For his essay serves to emphasise the contrast, which must receive attention before the shrewd investigator of such questions has proceeded far, between the smooth and facile theoretical conception and the rough awkward perilous translation into practice, of certain dominant ideas, which lie in common underneath the subtle dialectic of the speculative economist, weighing with nice serenity the complicated pros and cons, and the comparatively indiscriminate assurance of the busied, bustling politician, pressing with eager haste towards the goal on which his mind has resolutely been set, and thrusting forcibly aside all qualifying considerations.

It is true that Mr. Hobson himself pursues a definite purpose and is very anxious to abjure detachment from the concrete circumstances of the industrial system; and with this end in view he opens his inquiry with a minute examination at close quarters of the actual facts, which, he considers, have been neglected or mis-read by his predecessors. He nevertheless attempts to replace their faulty analyses with an elaborated exposition of his own; and his book is hardly one for those who run to read. It demands some preliminary acquaintance with the standpoint, and the conduct, of methodised reflection. He is, in this sense of the word, at least, as much a theorist as any author of a systematic treatise upon economic principles. He wears the uniform and employs the weapons of a speculative thinker; and the application of his abstract conceptions to concrete practice is in consequence, as we shall see, not immune from the difficulties and dissatisfaction which generally beset, and often hinder, such endeavours.

Yet it would not be unjust to hold that he lays himself open to the charge of putting a strain upon his reasoning, when, with what seems a manifest, if sidelong, glance at the increment tax on land, he seeks to reconcile the special separate taxation of future increments of rent contemplated by the present Budget with the general drift of his main argument. For in that he conceives and pourtrays the existence and significance of "unearned incomes," and the justice and expediency of taxing them, as common incidents of frequent wide occurrence, and in no sense as peculiar to the circumstances of land alone. But, by contrast, he appears not unwilling to fit this broad permanent theory to the narrower requirements of the passing hour and situation; and to some readers at least the particular contentions which he uses in this special case will seem ingenious rather than convincing, and to be not so obvious or necessary as they are somewhat far-fetched and partisan. In short, he may be suspected here of playing for the time the role of "special pleader," and not that of an impartial judge.

And, whether it be right or wrong to treat his inquiry as furnishing material for the defence or criticism of particular expedients which now occupy the public mind, there can be no dispute about his clear, sustained and definite resolve to devise and to advance a reasoned advocacy of systematic action by the State, and its officials, which would be generically described as "socialistic." That action may in some instances, as he shows, assume the form of the regulation or control of industry; in other cases the direct conduct of some industrial or trading enterprise may be expressly undertaken; while in a third set of examples socialism may proceed towards its goal by the route of discriminating taxes like those now proposed. But it should always, Mr. Hobson urges, distinguish carefully between "earned" and "unearned" incomes; and the appropriation of what he styles "unproductive surpluses" for public ends is a general plan of "socialism" which has the great advantage of possessing and employing a defensible "raison d'être."

To exhibit and expound this "raison d'être" is the chief purport of the fine, elaborated argument of this book; although Mr. Hobson may diverge by the way some little distance to criticise the differential treatment of imports, which fiscal reformers recommend. He contrives, however, with dexterity, though with incomplete consistency, to bring his handling of the tariff question into an accord with the main gist of his discourse; and in a similar spirit he repeats the theme he has more than once before chosen for detailed explanation, when he has emphasised the bonds linking unemployment with excessive saving or with a failure to consume. For that well-worn text is made subservient here to the dominant "motif" of his essay.

The scope and purpose of his present sermon are outlined in his preface. "The problem of distribution," it is there announced, turns on "distinction between costs and surplus." That distinction indeed is fundamental; and its ramifications extend far. "Costs" are the "payments necessary to evoke" and to "maintain the use of the existing powers of production." For capital, labour and ability alike have their "costs"; and the "distribution" of the "portion of the product required for this purpose admits of no real disturbance or evasion." Such payments "represent" the "permanent harmony" prevailing between the factors. But, "where industry creates a product larger than is needed for these costs of maintenance," the "surplus" arising is not "distributed" by any "necessary law." It is, on the contrary, "taken by the owners of the several factors of production in accordance with the economic 'pull' they can respectively exert," and the "strength of this pull varies with the degree of scarcity, natural or contrived, which the owners" are "able to secure," and with the "economic importance attaching to this scarcity." From time to time, in "each stream of industry, by which raw materials pass by various processes of manufacture, transport and commerce, into the possession of consumers," one or other of the different factors of production will be "relatively scarce," and be thus enabled to "take a surplus payment by refusing to co-operate unless it gets it." "The surplus," in fine, "passes in innumerable fragments to the owners of a scarce factor of production wherever it is found."

Such is the thesis which Mr. Hobson here puts forward; but he adds a further complication, and introduces an additional refinement, by pointing out that in the constitution of this surplus we must distinguish between a "productive" and an "unproductive" portion. Some of it may not indeed be needed to "sustain the current rate of productivity in the factor that receives it," but may nevertheless "evoke and feed an increased or an improved supply" of such "productivity"; and it is only where "scarcity enables a factor of production to extort a price for its use," which is not thus effective, that "an unproductive surplus" in reality appears. Yet this "unproductive surplus," arising in this way, is the origin of all our economic ills. It lies at the root of unemployment. It is the cause of waste. It supplies the true "raison d'être" of wise trade-unionism. And it should be from this source, and this source alone, that the State should properly obtain through taxation the funds which should be forthwith applied for the development of public services and the furtherance of social benefits. Nor is this "unproductive surplus" small in magnitude; for it "represents the failure of the competitive system to compete," and, in actual fact, "combination and monopoly," whether natural or artificial, are continually limiting to narrower dimensions the existence and the exercise of "free competition" in the industrial system. In short, "unproductive surplus includes," in Mr. Hobson's words, "the whole of the economic rent of land, and such payments made to capital, ability or labour, in the shape of high interests, profits, salaries or wages, as do not tend to evoke a fuller or better productivity of these factors."

If we had sufficient space in this review we might attempt to show that in the detailed execution of the broad conception thus outlined Mr. Hobson substitutes at more than one crucial point summary assertion or individual personal impression for elaborated argument or reasoned justification, and that by means like these he begs the question in effect, although we should admit that his dialectic is generally apt and subtle, and that his criticism of other writers is often both suggestive and acute. But the particular commentary on which we would now lay greater stress, because it has, we think, a pertinent reference to the application of Mr. Hobson's reasonings to current politics, would be differently shaped. For even if we grant the reality of such a "surplus," and acknowledge that there may be an important difference between a "productive" and an "unproductive" variety of this surplus, the great difficulty still remains of establishing and fixing these distinctions with definite precision. The arduous task is not easily accomplished in the quiet region of pure theory; and yet Mr. Hobson, if we understand him rightly, is ready to concede that a slight error in applying his ideas to practice might entail grave disadvantage. He approves, it would seem, of taxing the *future* increments, at any rate, of land values; and he favours a graduated income-tax as a mode of reaching, for the benefit of the community at large, some at least of those more general forms of "unearned" incomes which, equally with "economic rent," are "unproductive surpluses." But in both cases the real difficulties emerge as soon as we leave the sphere of plausible abstract generalities and descend to hard particular concrete detail. The crucial problem turns indeed on the translation into equitable practice of such fair-seeming theories; and the solution of the enigma is beset with difficulty, uncertainty and peril, because the nice distinctions of the speculative conceptions constitute their essence and are indispensable.

We cannot see that Mr. Hobson has been really more successful than his predecessors in furnishing a statesman socialistically disposed with a handy rule of unerring action or a plain, unmistakable maxim of safe policy; and his failure may, we think, be traced in some degree to the unusual candour and remarkable ability with which he has conceived and conducted the ingenious argument advanced. We hold indeed that his severe criticism of the determining influence ascribed in economic theory by modern writers to what are called "marginal factors" in supply and demand respectively suffers from a failure to bring out into clear relief the necessary distinction between the forces which fix the margin and the other forces which, granting the preliminary determination of a margin, operate to settle the value of the commodities or services considered; and that he does somewhat less, rather than somewhat more, than justice to that conception of the final addition or the last withdrawal turning the scale of a pair of balances which is, as we believe, the fundamental notion at the basis of the theories of marginal increments and decrements held in such favour recently. His view is, it is evident, necessary to his chief argument, for his "surplus" must enter into expenses of production. But it would not be easy to quarrel with his pertinent contention that such theories cannot be introduced where combination or monopoly replace on both sides of a bargain the individual competition of infinitesimal additions or subtractions; and with some of his criticism or censure of the exponents of orthodox economics we should be disposed to agree no less unreservedly than we should endorse the many large concessions which he makes to opponents of crude socialism. His description of trusts as federal is, we think, illuminative. But, in conclusion, we must add that he, no more than either of these two categories of writers, escapes the powerful seduction exercised by the rarefied atmosphere of impalpable imaginative speculation, although he starts, as we have seen, on his intellectual journey with the firm resolve to study and to analyse the concrete phenomena of the actual industrial system existing at the present day in this particular portion of the terrestrial globe. L.L.P.

9.—*Royal Commission on the poor laws and relief of distress.* Appendix vol. xvii. *Report on the effect of out-door relief on wages and the conditions of employment.* By Miss Constance Williams and Mr. Thomas Jones. xviii + 590 pp., fol. [Cd–4690.] 1909. Price 5*s.*

The share of Miss Williams in this report is limited to the interim reports on London and England, which occupy something less than half of it; for the other interim reports and the final report Mr. Jones is solely responsible. The authors sought to solve the difficult problem committed to them by a method of gradual approach, and by the selection of a certain number of typical unions for detailed inquiry. In them they found that 23 per cent. of the women paupers were earning, but as regards three out of four of these, the employment was of a casual domestic character. They estimate the average amount of weekly earnings at from 4*s.* to 8*s.* They did not find that the women paupers employed in factories and workshops were paid less wages than other women workers, nor did they find much appreciable result from the refusal of out-relief, inasmuch as in many cases that relief might be discontinued without hardship. They did not find that wages differed in the same industry between firms where the workers were, and those where they were not, recipients of out-relief. They found that the direct influence of out-relief as a cause of sweating is commonly exaggerated; that its effects on the levels of wages and on the migration of workpeople and of industries are so small as to be negligible when compared with other forces at work. It would seem from this that their answer to the question proposed to them might have been a direct negative, but Mr. Jones has not taken so narrow a view of the mission entrusted to him. By a deductive method he has satisfied himself that the principles of 1834 are of limited application. He passes in historical review the opinions that have been formed as to the bearing of those principles upon out-door relief. He seeks to establish a comparison between lax and strict unions in their effect on wages. While condemning the system of out-relief as applied hitherto, he believes in the thoroughgoing adoption of an allowance system, in suitable cases. His suggestions of remedies are:—1st, industrial: the decasualisation of men's labour, the better industrial training of boys and girls, and provision against depression of trade by insurance and by the provision of useful work; 2nd, educational: spending taxes to-day so as to raise the earning power of the rising generation, and exercising a bold policy of liberality towards widows and their children; 3rd, administrative: establishing a new classification and new machinery for the aged, the sick, those in temporary distress, and those for whom disciplinary institutions would be suitable, besides the registration and organisation of all charities and the suppression of some. There appears to be some want of congruity between the two branches of the report, and these views, which have evidently had great weight with the Commissioners, can hardly be said to be adequately supported by the investigation of a limited branch of the question which the authors were deputed to make. The statistical tables in the appendix are interesting, but are open to the criticism that they apply to selected districts only. E.B.

10.—*Making of our clothes: a case for trade boards, being the results of a year's investigation into the work of women in London in the tailoring, dressmaking, and underclothing trades.* By Mrs. Carl Meyer and Clementina Black. xv + 304 pp., 8vo. London: Duckworth and Co., 1909. Price 5*s.*

The sub-title of this work indicates that it is intended to support the case in favour of the speedy enactment of a Bill similar to that presented to the House of Commons in March last to provide for the establishment of trade boards for certain trades, those specified in the schedule to the Bill being ready-made and wholesale bespoke tailoring, cardboard box making, machine-made lace and net finishing, and ready-made blouse making. Provision is made for application to other trades if expedient. The authors, with some aid from other social workers, instituted an investigation into the conditions affecting women's work in the specified trades by means of personal interviews with workers and employers. The subject is not treated statistically, and is probably not susceptible of statistical treatment, as the conditions of personal character and ability vary very greatly, and affect the results. Besides many cases referred to in the text, detailed particulars of fifty-eight cases are given in a tabular form in the appendix. These afford much interesting information, and while they reveal many instances of hardship and distress, they also include some evidence of a character that is favourable to both the employer and the workwoman. The former class are not always inconsiderate and harsh, and the latter frequently manifest a spirit of cheerful acquiescence that does them credit. In this, as in most other conditions of life, legislation is called for in respect of those employers only who without it would be unable or unwilling to abstain from taking an unfair advantage of the necessitous circumstances of those they employ. One of the most useful lessons to be derived from this inquiry is that of the fallacy that lies in generalities. Great credit is due to the authors for the sympathetic and thorough way in which they have fulfilled the laborious task they undertook. E.B.

11.—*Die Bewegung des Silberpreises seit* 1873. Von Paul George. 127 pp., crown 8vo. Jena: Gustav Fischer, 1908. Price 3 marks.

The purpose of this volume appears to be to present data tending to the conclusion that the development of the nations which are, as yet, backward nations industrially and commercially, will call for a larger use of silver for circulating purposes, and that the more advanced nations also need an increased supply of fractional currency of that metal. In consequence of the demands thus anticipated, the price of silver may be expected to recover, the need for the metal to increase faster than its production. Though dated October, 1908, the greater part of the data presented are those relating to 1906 and earlier years. To say that the continuance of the depression in the market price of silver through 1908 and 1909 disproves the author's thesis would be to commit an error similar to that to which he seems inclined when he lays no little stress on the contrasts between the years 1904 and 1905; yet, had he been able to foresee the course of the market, he might perhaps have modified the tone of his essay. He gives us little that is new, and the arrangement of the material seems somewhat casual, the relation of much of it to the purpose of the volume not being very clearly indicated. The sources of the material appear to be almost wholly German, and, considering how much has been written on the subject, not over numerous. The designation of the

Bank of England as the "Bank of London" (p. 55 n), and the confusion of the Mint with the Bank (p. 63), among other things, seem to indicate either a lack of care or of complete familiarity with financial questions. The proof-reading, too, might have been done with somewhat greater thoroughness. A.W.F.

12.—*Grundriss zum Studium der politischen Oekonomie von Prof. Dr. J. Conrad. Vierter Teil: Statistik.* II. Teil, II. Hälfte. *Gewerbestatistik von Prof. Dr. A. Hesse.* ix + 379 pp., 8vo. Jena: Gustav Fischer, 1909. Price 9 marks.

This volume forms one of a series designed by Professor Conrad as a foundation to the study of political economy. Former volumes have treated of national economy, political and financial sciences, statistics of population, occupations, agriculture, &c. The present book gives a statistical survey of industry, or rather that part of industry "which consists in changing the form of raw materials." Transport and commerce are therefore excluded and reserved for separate treatment, while agriculture, mining and smelting, &c., are also placed outside the scope of the volume, having already been dealt with in an earlier work. Though this narrow definition of his subject-matter may have been imposed on Dr. Hesse by the general scheme of the series, it unfortunately results in a more or less incomplete picture of the industrial side of man's activities.

As a preliminary to the discussion of industrial statistics, considered under the twofold head of statistics of the means of production and of the results, the author gives a short and useful description of the sources of information. Most important are the industrial censuses taken in several countries. It is significantly pointed out that England, "the first industrial State of the world," is lacking a general census of this kind—a deficiency that is made apparent in several subsequent sections of the book, though it will doubtless be largely made good by the results of recent inquiries by the Board of Trade. Other sources of information are those more or less extensive compilations of statistics necessary to fiscal and commercial arrangements; also certain labour statistics, and the results of special investigations. The data furnished by these sources are extremely varied in character, while those relating to one country are rarely comparable with those pertaining to another.

In the second part of the book, the principal industrial statistics available are briefly summarised and described. First come particulars of the number of industrial undertakings or concerns, classified under some twelve or more groups of industries; then the size of the undertakings, as measured by the number of persons employed, followed by chapters on the legal form of the undertakings (whether joint-stock or other companies, &c.); their personnel; their use of mechanical power; seasonal industries; and domestic industries. Certain groups of industries are then considered separately, largely from the standpoint of output. The amount of information available, as regards both the several branches into which the author divides his subject, and also the different countries, varies greatly. Especially is this true as to statistics of output or production. In many instances the nearest approach to output is afforded by international trade statistics. Occasionally the author gives a table showing the value in one year only (1906) of the imports and exports of certain products into and out of the principal countries concerned. Such tables appear to us of no very great use. In a book giving a comprehensive view of industry, not only should quantities be stated, to correct the impression given by values, but, more important still, the trade figures for several successive years should be quoted, or, if space does not permit of this being done, the annual average of, say, five years should be given, to allow for, or to eliminate, the accidental fluctuations from year to year. It is also a matter of regret, though this is in no way the fault of the author, that many statistics are extremely out of date, some being no more recent than 1896 or even an earlier year. For example, most of the statistics relating to industry in Belgium are for the year 1896—the date of the last Belgian industrial census.

In the final sections, Dr. Hesse briefly describes the results of the German industrial census of 1907, which were published too late to be incorporated in the body of the book. It is not unimportant to point out in a review of a statistical work that, although the author is, of course, aware that the personnel does not mean the same thing in the census of 1907 as in the earlier censuses of 1882 and 1895 (see notice of German census of 1907, herein), he yet discusses it (p. 362) as though it did.

Despite some defects, however, many of which arise from the paucity of authentic data, and some of which are inevitably attendant upon all summaries of such complex statistical works as censuses, the book is of great value as a reliable epitome of such industrial statistics as do exist. A.D.W.

13.—I. *Statistik des Deutschen Reichs.* Band 231, 1. *Berufs- und Betriebszählung vom* 12. *Juni*, 1907. *Gewerbliche Betriebsstatistik.* Abteilung I, Heft I. 166* + 67 pp., 4to. Berlin, 1909.

II. *Statistik des Deutschen Reichs.* Band 215, 1. *Berufs- und Betriebszählung vom* 12. *Juni*, 1907. *Gewerbliche Betriebsstatistik.* Abteilung III, Heft I. 5* + 462 pp., 4to. Berlin, 1909.

In these two volumes are published further results of the German industrial census of 1907. The first volume of census results, containing general information, and giving a detailed classification of the occupations of the people, was reviewed in the June number of this Journal, p. 410. In the present volumes are given statistics of industrial undertakings and their personnel. Agriculture, railways, the postal, telegraph, and telephone services, the medical, legal, scholastic, and other liberal professions are not included.

Two schedules were issued, the first for undertakings in which not more than three persons were employed, which had no outworkers and used no mechanical power; and the second for all other concerns. The information asked for included the name of the owner, locality of the undertaking, kind of business, details of the personnel, nature and extent of motive power (if any), &c. The personnel was required to be classified under the following heads: (*a*) proprietary and directing staff; (*b*) management and clerical staff; (*c*) technical staff; (*d*) wage-earners, &c.; and (*e*) family dependents helping in the business. Both the number of persons actually employed on the day of the census, and the greatest number employed at any time, were stated. In the former, but not the latter case, the numbers exclude duplicate entries. In previous censuses the average number employed was required to be given, so that the present results as regards personnel are not strictly comparable with those of earlier censuses. The undertakings or business concerns are themselves variously classified. Principal undertakings (*Hauptbetriebe*) are those in which was employed at least one person who found therein his chief occupation. All other concerns are supplementary or subsidiary (*Nebenbetriebe*), and in them no personnel was enumerated, since every person was counted once in a principal undertaking, or, if mainly employed in agricultural or other non-industrial concerns, was not included at all in the present results. A second classification divides the undertakings into those in which only one person (the proprietor) was employed, and no power was used (*Alleinbetriebe*), and those with more than one person, or using power (*Gehilfenbetriebe*). The latter class may therefore employ only one person, providing power is also used. These distinctions appear somewhat artificial, but are not without their use.

The thousands of different kinds of industrial undertakings enumerated have been reduced to a few hundred headings, arranged in twenty-three groups, and these in three divisions. The first of the two volumes under notice contains two tables, one giving, under the various industries, the number of undertakings or concerns, with their personnel, and the other classifying them according to the number of persons employed. These results may be summarised as follows:—

Groups of industries.	Total number of undertakings.	Principal undertakings only (*Hauptbetriebe*).	Total personnel on 12th June, 1907.
Gardening, cattle-rearing, fishing, &c.	63,706	53,316	154,000
Mining, smelting, &c.	6,079	5,266	861,000
Working in stone, clay, &c.	52,435	47,626	771,000
Working in metals	166,663	152,523	937,000
Machine construction, &c.	108,467	94,492	1,120,000
Textiles	161.218	136,364	1,088,000
Wood-working, &c.	241,375	205,418	771,000
Foods, &c.	359,924	309,836	1,240,000
Clothing and cleaning	870,935	809.281	1,559,000
Building	232,654	208,418	1,564,000
Commerce, transport, &c.	1,635,685	1,283.951	3,341,000
Others	160,778	141,907	1,030,000
Total	4,059,919	3,448,398	14,436,000

Of the total number of principal undertakings, 1,790,930 employed only one person; 1,504,463 employed from 2 to 10 persons;

138,649 from 11 to 100; 12,862 from 101 to 500; 988 from 501 to 1,000; and 506 over 1,000.

The second of the two volumes under review shows the distribution of undertakings, classified according to industry, and with details of their personnel, among the constituent States and principal land divisions of the Empire. Prussia is credited with about 55 per cent. of the undertakings enumerated in the whole Empire, Bavaria coming second with no more than 12 per cent. A.D.W.

14.—*Other New Publications.**

Andersson (*Thor.*). Riksfinanspolitik och Socialförsäkring. 88 pp., 8vo. Stockholm, 1909. 1 kr. 50 öre.

[An economic study of the relations of State finance to social insurance.]

Behr (*Friedrich*). Die volkswirtschaftliche Bedeutung der technischen Entwickelung in der Schuhindustrie. (Technisch - volkswirtschaftliche Monographien. Band 8.) 8vo. Leipzig: Werner Klinkhardt, 1909. 3 marks 50 pf.

[An economic study in the development of the boot industry in Germany.]

Bosc (*André*). Le rôle social des caisses d'épargne privées en France et en Italie. 8vo. Paris: A. Rousseau, 1909. 5 frs.

[A study of savings banks in France and Italy, and of legislation dealing with their control in the two countries. The savings banks in Italy, compared with France, are allowed more latitude as to the disposal and investment of their funds, and these have helped to organize agricultural credit, and to develop the industrial and commercial resources of the country. The French savings banks are under close State control, and their deposits must be invested in State funds or securities specified by the State. The author hopes that the French Government will allow the savings banks the free use of a portion of their funds for investment, at their discretion, in agricultural and industrial ventures.]

Cambon (*Victor*). L'Allemagne au travail. 3^e édition. 8vo. Paris: P. Roger and Co., 1909. 4 frs.

[An interesting account of the principal industries of Germany and of their growth. There are chapters on German methods of technical education, certain selected industries, the relations between employer and employee, and the future of Germany and its bid for greater sea power.]

Curtler (*W. H. R.*). A short history of English agriculture. 8vo. Oxford: Clarendon Press, 1909. 6*s.* 6*d.*

[It is hoped to notice this book at length in a later issue.]

Dunmore (*Walter T.*). Ship subsidies. An economic study of the policy of subsidizing merchant marines. 8vo. Boston: Houghton, Mifflin and Co., and London: A. Constable and Co., 1907. 4*s.* 6*d.*

[A study of subsidies and of the case for and against them. The book contains a review of American shipping and of its present position. The American coasting trade, which can only be carried on by American vessels, has increased steadily; their foreign shipping trade has decreased since about 1860, when the change from wooden to iron ships took place. The author discusses various remedies, among them the removal of all tariffs on shipbuilding materials, as is the case in Germany, and discriminating duties in the indirect trade, which would, he thinks, divert to American shipping a portion of the carrying trade at present largely in British hands.]

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* See also "Additions to the Library," pages 660 *sqq.*

Elderton (*Ethel M.*). University of London. Galton Laboratory for National Eugenics. Eugenics Laboratory lecture series. III. The relative strength of nurture and nature. 1909. 40 pp., 8vo. London: Dulau and Co., 1909. 1*s.*

[A study of degeneracy, as shown in children of the poorer classes, and of the different causes thereof.]

Ertel (*Josef*). Die volkswirtschaftliche Bedeutung der technischen Entwickelung der Zelluloidindustrie. (Technisch-volkswirtschaftliche Monographien. Band 5.) 8vo. Leipzig: Werner Klinkhardt, 1909. 3 marks 50 pf.

[A study of the development of the celluloid industry in Germany.]

Ferraris (*Carlo*). Il movimento generale dell' emigrazione italiana: suoi caratteri ed effetti. 42 pp., 8vo. Rome, 1909.

Goldstein (*D. Ferdinand*). Die Übervölkerung Deutchlands und ihre Bekämpfung. 128 pp., 8vo. Munich: Ernst Reinhardt, 1909. 2 marks 50 pf.

Heinemann (*Bruno*). Die wirtschaftliche und soziale Entwickelung der deutschen Ziegelindustrie unter dem Einflusse der Technik. (Technisch-volkswirtschaftliche Monographien. Band 6.) 8vo. Leipzig: Werner Klinkhardt, 1909. 3 marks 50 pf.

[A study of the tile and brick industry in Germany, its development, and the social condition of those engaged therein.]

Henderson (*Charles Richmond*). Industrial Insurance in the United States, 1909. 8vo. Chicago: University of Chicago Press, 1909. 9*s.*

[An exhaustive study of industrial insurance, which it is hoped to notice more fully in a later issue.]

Hepburn (*A. Barton*). Artificial Waterways and Commercial development (with a history of the Erie canal). 8vo. New York: Macmillan and Co. 4*s.* net.

[This book gives a brief account of the canals of the world, but deals especially with the waterways of the United States and their relation to commercial development. The author points out the advantages of maintaining both land and water routes, and advocates the extension of canals as supplemental to railways and not to compete with them. There is an appendix of statistical tables dealing mostly with the trade on the canals of New York State.]

Jahrbuch der Statistik. Herausgegeben von Dr. H. Platzer. I. Jahrgang. 8vo. Strassburg: Karl J. Trübner, 1909. 5 marks.

[This is a useful handbook of international statistical administration and statistical science. The first part deals with state and municipal official statistical departments and bureaux in Germany and other countries. Under each country are given lists of the bureaux, the names of the principal officers and lists of their publications. The second part gives a list of statistical societies throughout the world, and in the case of the International Statistical Institute the full list of members is given. The third part deals with the teaching of Statistics and Economics in universities and colleges throughout the world, and the names of the professors are given in each case. The fourth part gives a list of unofficial Economic and Statistical periodicals arranged under countries, but as the *Journal of the Royal Statistical Society* is omitted the list cannot be regarded as exhaustive.]

Jevons (*H. Stanley*). Foreign Trade in Coal. (No. 1. Publication of Department of Economics, &c., University College of S. Wales.) 15 pp., 8vo. London: P. S. King and Son, 1909. 1*s.* net.

[The first of a series of studies descriptive of the commerce and principal industries represented in South Wales, and of the economic and social conditions of the coalfields. The author studies the export trade in coal of Germany and other countries, the effects of the coal tax, the world's markets for British coal, and the changes in freight rates in recent years.]

Johnson (*Arthur H.*). The disappearance of the small landowner. Ford Lectures, 1909. 8vo. Oxford University Press, 1909. 5*s.* net.

[An economical and historical study of the causes of the decline of the small landowner in this country. It is hoped to notice this book at length in a later issue.]

Kovalewsky (*Maxime*). La France économique et sociale à la veille de la Révolution. Les Campagnes. 8vo. Paris: Giard and Brière, 1909. 9 frs.

[The book deals with the conditions of the ownership and tenure of land in France on the eve of the French Revolution.]

Latham (*Baldwin*). A chapter in the history of Croydon. 104 pp., 8vo. 1909.

[An interesting compilation of local history, comprising records of the population, marriages, baptisms and burials of Croydon for the years 1539 to 1901.]

Leake (*P. D.*). Income tax on capital. A plea for reform in the official method of computing taxable profits. 16 pp., 8vo. 1909.

Levasseur (*E.*). Le coût de la vie. Enquête sur le prix des denrées alimentaires depuis un quart de siècle dans 70 Lycées. 53 pp., 8vo. 1909.

Marr (*Vyvyan*). Some financial and statistical considerations of the Old Age Pension scheme. [Reprinted from the Journal of the Institute of Actuaries, July, 1909.] 36 pp., 8vo. 1909.

[This Paper gives an account of the working of the Old Age Pension scheme, and also takes into consideration its probable effects upon the business of industrial insurance companies and friendly societies. The author estimates the annual cost of the pensions at 7,800,000*l.*, and their present value at about 42,000,000*l.*]

Mortara (*Giorgia*). Tavola di sopravvivenza e delle variazioni di stato civile e tavola di natalita legittima per la popolazione femminile del Comune di Milano. (1899-1902.) 31 pp., 8vo. Naples, 1909.

Noyes (*Alexander Dana*). Forty years of American finance. A short financial history of the Government and people of the United States since the Civil War, 1865-1907. Second and extended edition of "Thirty Years of American Finance." 8vo. New York: G. P. Putnam and Sons, 1909.

Paris. Société de Statistique de Paris. La Société de Statistique. Notes sur Paris à l'occasion du Cinquantenaire de la Société et de la XII^{e} session de l'Institut international de Statistique. 8vo. Nancy: Berger-Levrault et Cie., 1909.

[This volume, which it is hoped to notice more fully in a later issue, contains a series of articles, each written by an eminent statistician or economist, on the economic and social conditions of Paris. There is a valuable account of early statisticians and their works by M. Fernand Faure.]

Pearson (*Karl*), F.R.S. University of London Galton Laboratory for National Eugenics. Eugenics laboratory lecture series. V. The problem of practical eugenics. 38 pp., 8vo. 1909.

[To serve as an introduction to the science of Eugenics, by stating in non-technical language suited to the general reader the conclusions drawn from statistical investigations and their bearing on national welfare.]

Pratt (*Edwin A.*). German Railways and Traders. 45 pp., 8vo. P. S. King and Son, 1909.

[This pamphlet gives an account of the working of railways in Germany, and of the relations between German railways and traders. Conditions, as regards railways, in this country and Germany are so different that comparisons between the two systems are hardly practicable.]

Raffalovich (*Arthur*). Le marché financier (année économique et financière 1908-09). 18e volume 1908-09. Angleterre, Allemagne, États-Unis, France, Russie, Italie, Japon, Autriche-Hongrie. Métaux précieux, Questions monétaires. 8vo. Paris: Felix Alcan, 1909.

Schaefer (*Franz*). Die volkswirtschaftliche Bedeutung der technischen Entwickelung in der Papierfabrikation. (Technisch-volkswirtschaftliche Monographien. Band 9.) 8vo. Leipzig: Werner Klinkhardt, 1909. 7 marks.

[An economic study of the paper trade in Germany, and of the economic conditions of those employed therein.]

Shrittau (*George*). Professions and occupations of the people [in various countries] [in Russian]. 324 pp., 8vo. St. Petersburg, 1909.

Somló (*Felix*). Der Güterverkehr in der Urgesellschaft (Fasc. 8 des Notes et Mémoires de l'Institut de Sociologie). La. 8vo. Brussels: Misch and Thron, 1909.

Stanuell (*C. A.*). British Consols and French Rentes. 24 pp., 8vo. London: P. S. King and Son, 1909. 6*d.*

[The writer considers that French securities have a better value in the market than British, and an attempt is made to explain the reasons. The author hopes to see an increased popularity for Consols in this country, as is the case with Rentes in France, where the holders of stock number over 4,600,000, as against 200,000 holders of Consols in England.]

Stockholm. Quelques données statistiques publiées à l'occasion de la visite parlementaire française le 21–23 Juillet 1909, par le Bureau de statistique de la ville. Sm. 8vo. 1909.

[This illustrated booklet gives in a handy form the most recent Statistics of a general nature relating to Stockholm.]

Sundbärg (*Gustav*). Maisons souveraines de l'Europe en 1841-90: étude démographique. 8vo. Upsala, 1909.

Templeman (*Frederick*). Marine Insurance: its principles and practice. 2nd edit. (revised and enlarged). 8vo. London: Macdonald and Evans, 1909. 3*s.* 6*d.*

[A useful handbook for average adjusters and others interested in marine insurance. It is based upon lectures given at the London Chamber of Commerce in connection with their scheme for promoting higher commercial education.]

Wachs (*Alexander*). Die volkswirtschaftliche Bedeutung der technischen Entwickelung der deutschen Wollindustrie. (Technisch-volkswirtschaftliche Monographien. Band 7.) 8vo. Leipzig: Werner Klinkhardt, 1909. 3 marks.

[A study of the woollen industry in Germany, and of the social and economic conditions of its workers.]

Webb (*Clarence A.*). Valuation of real property. A guide to the principles of valuation of land and buildings, &c., for various purposes, with numerous examples and a supplementary chapter on the Finance Bill, 1909. 8vo. London: Crosby Lockwood and Son, 1909.

[This book gives a good general account of the principles and practice of valuation of real property.]

Williams (*Ernest E.*). The House of Lords and taxation. Being an attempt to examine the position of the House of Lords in reference to money bills and taxation. 16 pp., 4to. 1909.

Wilson (*H. Raynar*). The safety of British railways, or railway accidents: how caused and how prevented. 8vo. London: P. S. King and Son, 1909. 3*s.* 6*d.* net.

[A study of the causes of railway accidents thirty years ago and at the present time. The improved equipment of British railways has greatly helped to lessen accidents, and when they now occur they are more often due to human error than to a defect in the rolling stock or signalling apparatus. There would appear to be still room for improvement in the conditions regulating the safety of employees, judging from the number of casualties among them.]

Zorn (*John C. L.*). The Incidence of the Income Tax. 55 pp., 8vo. London: Effingham Wilson, 1909. 6*d.*

STATISTICAL AND ECONOMIC ARTICLES IN RECENT PERIODICALS.

UNITED KINGDOM—

Accountants' Magazine, August, 1909—The legal limitations of an auditor's duties and responsibilities: *Wardhaugh* (*John B.*).

Bankers' Magazine, 1909—

July—The budget. How insurance companies are affected. Canadian banking.

August—Canadian banking.—II. The death duties. Economic indices: *Smith* (*James C.*). Sir R. H. Inglis Palgrave. The Bank of France. The Imperial Bank of Germany.

September—Gold reserves. Notes on the report of the Gold Reserves Committee of the London Chamber of Commerce, July, 1909: *Tritton* (*J. Herbert*). Uniform statements of accounts by banks: *Palgrave* (*Sir R. H. Inglis*). Savings bank funds and trade: *Gibson* (*A. H.*). The financial and economic position of Japan. National Bank of Belgium.

Economic Review. July, 1909—The Belgian detention colony at Merxplas: *Pringle* (*Rev. J. C.*). Co-operative credit in India: *Barker* (*D. A.*). Child labour in factories and workshops: *Baggallay* (*F. W.*). Legislation, parliamentary inquiries, and official returns: *Pringle* (*Rev. J. C.*).

Financial Review of Reviews, 1909—

July—The Clergy and their investments: *Sinclair* (*The Ven. Archdeacon*). Irish landlords and the Trustee Act: *Tighe* (*E. K. B.*). The Royal Commission on shipping rings: *Mackay* (*Sir James Lyle*). British capital and legal protection in foreign countries: *Williams* (*Ernest E.*). The combination of British iron and steel interests: *Randles* (*Sir John S.*).

August—The Eight Hours Act and investors: *Taylor* (*Benjamin*). The problem of the incidence of rates: *Symes* (*Rev. J. E.*). Mexico as a field for investment: *Martin* (*Percy F.*).

September—The real yellow peril: a plea for the issue of ten-shilling notes: *Desborough* (*The Right Hon. Lord*). The first half-year of railway co-operation: *Lawson* (*W. R.*). The trend of Indian investment and finance: *Lethbridge* (*Sir Roper*). A colonial view of the geographical distribution of capital: *Beaford* (*Prof. H. D.*).

Journal of the Board of Agriculture, 1909—

July—Afforestation of catchment areas. The International Agricultural Institute. Agriculture in the Argentine Republic.

August—Co-operation in the tenure of small holdings: *Wilkins* (*Mrs. Roland*). The experimental error in field trials: *Hall* (*A. D.*). Agricultural education in the Netherlands: *Gilchrist* (*Douglas A.*).

UNITED KINGDOM—*Contd.*

Journal of Department of Agriculture, &c., for Ireland. July, 1909—Store cattle *or* butter, bacon, and eggs? : *Campbell* (*J. R.*). Winter milk production: experiments: *Adams* (*J. M.*) and *Prendergast* (*W. F.*). Winter and summer calf-rearing: *Adams* (*J. M.*) and *Prendergast* (*W. F.*). Winter egg records. The meat supply of the United Kingdom.

Journal of Institute of Actuaries. July, 1909—Some financial and statistical considerations of the Old Age Pension scheme: *Marr* (*Vyvyan*). On the annuity business of British offices and the valuation thereof: *Oakley* (*H. J. P.*).

Journal of the Royal Colonial Institute, 1909—

June—Imperial emigration and its problems: *Arthur* (*Dr. Richard*).

July—Indian aspirations: *Fuller* (*Sir Bampfylde*).

Surveyors' Institution. Transactions. Session 1908-09—*Part XII*—State *v.* estate forestry: *Coles* (*S. H. Cowper*). Amendment of rating law and procedure: *Body* (*Arthur*).

UNITED STATES—

American Journal of Sociology, 1909—

July—The immigrant's bill of rights: *Stockwell* (*Alcott W.*). With Oregon hop pickers: *MacLean* (*Annie Marion*).

American Statistical Association. Quarterly Publications. No. 86. *June,* 1909—The life and work of Carroll Davidson Wright: *North* (*S. N. D.*). The federal census of occupations: *Hunt* (*William C.*). Statistics of divorce: *Hill* (*Joseph A.*). Better statistics of industrial mortality for the United States: *Wilbur* (*Cressy L.*). The teaching of statistics: *Bailey* (*William B.*). Teaching of statistics: *Huebner* (*Grover G.*).

Bankers' Magazine (*New York*), 1909—

July—Bank credits, some principles governing loans: *Robinson* (*P. M.*).

August—The development of a new western territory: *Weston* (*W.*).

Bulletin of the Bureau of Labor, 1909—

January—Woman and child wage-earners in Great Britain: *Clark* (*Victor S.*). Minimum wage act, 1908, New South Wales.

March—Wholesale prices, 1890 to 1908.

Journal of Political Economy, 1909—

June—An economic history of the Illinois and Michigan Canal (*continued in next issue, July,* 1909): *Putnam* (*J. W.*). Exhausted farms and exhausting taxation: *Davenport* (*H. J.*).

July—The language of economics: *Carlile* (*W. W.*). The commodities clause: *Marshall* (*L. C.*).

Political Science Quarterly. June, 1909—Growth of judicial power: *Dodd* (*W. F.*). Sectionalism in Pennsylvania during the Revolution: *Smith* (*Roy*). Marxism *vs.* socialism, III: *Simkhovitch* (*V. G.*). College women and race suicide: *Emerick* (*C. F.*).

UNITED STATES—*Contd.*

Quarterly Journal of Economics. August, 1909—On the returns of productive agents and on the productivity of capital in particular: *Landry* (*Adolphe*). Proportions of factors—advantage and size: *Davenport* (*H. J.*). The railway situation in Italy: *Tajani* (*Filippo*). Railways in New Zealand: *Le Rossignol* (*J. E.*) and *Stewart* (*W. D.*). The decline in the ratio of banking capital to liabilities: *Mitchell* (*W. C.*). A problem in deferred payments and the tabular standard: *Brown* (*Harry G.*). Tax reform in Washington: The exemption of intangibles: *Curtis* (*V.*).

Annals of American Academy of Political and Social Science, July, 1909—Influence of heredity and environment upon race improvement: *Kelsey* (*Carl*). Popular recreation and public morality: *Gulick* (*L. H.*). Establishment of a national children's bureau: *Parsons* (*The Hon. H.*). City deterioration and the need of city survey: *Geddes* (*Prof. Patrick*). The significance of the decreasing proportion of children: *Rossiter* (*W. S.*). The invasion of family life by industry: *Kelley* (*Mrs. Florence*). The instability of the family: *Lichtenberger* (*J. P.*). Immigrants and crime: *Bennet* (*Hon. William S.*). Immigration and the American laboring classes: *Mitchell* (*John*). Race progress and immigration: *Ripley* (*William Z.*).

Yale Review. August, 1909—Railway freights rates: the legal, economic and accounting principles involved in their judicial determination: *Robinson* (*Maurice H.*). Discrimination and co-operation in fire insurance rating: *Zartman* (*L. W.*). The causes of emigration from Greece: *Fairchild* (*H. P.*). The significance of advertising: *Dwight* (*Frederick*).

AUSTRIA-HUNGARY—

Statistische Monatschrift, 1909—

April—Rückfallstatistische Studien, unter besonderer Berücksichtigung der österreichischen Rückfallstatistik (*continued in issues for May, June and July*): *Forcher* (*Dr. Hugo*). Die Rückwirkung der Volkszählung auf die Anwendung und Durchführung der politischen, Finanz- und Justizgesetze: *Englisch* (*Dr. Karl Ritter von*). Die Bewegung der Getreidepreise in den Monaten Jänner, Februar und März 1909: *Sorer* (*Richard*). Die überseeische österreichische Wanderung in den Jahren 1906-07, sowie die Einwanderungs- und sonstigen Verhältnisse in den wichtigsten Einwanderungsstaaten (*continued in issues for May, June and July*): *Pflügl* (*Richard von*).

June—Der Fremdenverkehr des Jahres 1908 in Niederösterreich, Tirol und Vorarlberg: *Gerbers* (*H.*).

July—Der städtische Haushalt der Gemeinde Wien in den Jahren 1875 bis 1905: *Bratasseric* (—).

FRANCE—

Annales des Sciences Politiques. July, 1909—La sophistication du suffrage universel. Le projet de réforme financière de l'Empire allemand: *Dayras* (*Gabriel*). Chronique financière, 1908: *Paul-Henry* (*L.*).

FRANCE—*Contd.*

Bulletin de Statistique, Ministère des Finances, 1909—

June—Le projet de budget pour l'exercice 1910. Autriche-Hongrie.—Le projet d'assurances sociales en Autriche.

July—Production et consommation des alcools en 1908 et 1907. Les revenus de l'État.

Journal des Économistes, 1909—

July—Les retraites des chemins de fer: *Nouvion* (*Georges de*). L'industrie des transports maritimes: *Follin* (*H. L.*). Mouvement financier et commercial: *Zablet* (*Maurice*). Les banques danoises: *Huart* (*Albin*).

August—Causes de décadence des peuples modernes: *Molinari* (*G. de*). Le nouveau projet sur le régime des mines devant le Parlement: *Mossé* (*Armand*). Le budget de la ville de Paris pour 1909: *Letourneur* (*E.*). Mouvement agricole: *Molinari* (*Maurice de*).

Journal de la Société de Statistique de Paris, 1909—

June—Les établissements de crédit depuis cinquante ans; leur rôle, leur développement, leurs opérations: *Neymarck* (*Alfred*). Le coût de la vie en France: *Bellom* (*Maurice*).

July—Statistique des batailles et des pertes causées par la guerre depuis trois siècles: *Levasseur* (*E.*). Le développement des institutions d'assistance publique en France depuis le milieu du siècle dernier: *March* (*L.*).

La Réforme Sociale, 1909—

16*th June*—La lutte contre l'alcoolisme et les principes directeurs d'une vie sociale: *Cheysson* (*E.*). L'assurance contre le chômage. L'assurance par les syndicats et les sociétés de secours mutuels: *Olphe-Galliard* (*G.*). La défense des classes moyennes: *Dufourmantelle* (*M.*).

1*st*—16*th July*—La désertion des campagnes: *Méline* (*M.*). L'exode rural et la constitution de la population agricole: *Zolla* (*Daniel*). [This number deals specially with rural depopulation and contains other papers and discussions on the subject.]

1*st*—16*th August*—L'association considérée comme moyen d'enrayer la désertion des campagnes: *Dufourmantelle* (*M.*). La désertion des campagnes en pays limousin. Enquête monographique: *Clément* (*Henry*). Décadence de l'atelier agricole: *Brun* (*Henri*). L'industrie de la dentelle, sa situation présente, son avenir: *Engerand* (*F.*). Les mouvements de paix sociale en Hongrie: *Louis-Jaray* (*Gabriel*).

Revue d'Économie Politique, 1909—

June—Monnaie: propriété et valeur en régime socialiste: *Pinard* (*André*). L'État et les compagnies de navigation subventionnées: *Join-Lambert* (*André*). Les associations pour la défense des intérêts patronaux en Allemagne: *Dechesne* (*Laurent*).

July—Conflits entre la Convention sucrière de Bruxelles et les traités de commerce: *Thibault* (*Fabien*). La maternité et l'évolution capitaliste: *Lewinski* (*Jan.-St.*). Les crises et la statistique: *François* (*G.*).

GERMANY—

Archiv für Rassen- und Gesellschafts-Biologie. *May—June*, 1909—Neigen inselbewohnende Säugetiere zu einer Abnahme der Körpergrösse? *Hilzheimer* (*Max*). Die Anlage zur Mehrlingsgeburt beim Menschen und ihre Vererbung: *Weinberg* (*Dr. W.*). Aussterbende Familien: *Velden* (*Dr. Fr. von den*). Weiteres zur Frage der Mutterschaft: *Grassl* (*Dr.*).

Archiv für Sozialwissenschaft und Sozialpolitik. *July*, 1909—Die Soziallehren der christlichen Kirchen. III. Hauptteil: Der Protestantismus. I. Das soziologische Problem des Protestantismus: *Troeltsch* (*D. Ernst*). Der Homo Oeconomicus und die Kooperation: *Michels* (*Dr. Robert*). Der Kampf um die Besitzsteuer: *Altmann* (*Dr. S. P.*). Der Neunstundentag im Bergbau und die belgische Enquête über die Arbeit in den Steinkohlenzechen: *Vandervelde* (*E.*). Die Pensionsversicherung der Privatbeamten in Oesterreich: *Kienböck* (*Dr. Victor*).

Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft (*Schmoller's*), *Heft* 3, 1909—Die Gemeingültigkeit volkswirtschaftlicher Erkenntnis und ihre logische Begründung: *Kieseritzky* (*Ernst*). Zur naturwissenschaftlichen Gesellschaftslehre. 18. Nachträge: *Tönnies* (*Ferdinand*). Die Entstehung und die Verfassung des Burgundischen Reiches im 15. und 16. Jahrhundert: *Pirenne* (*Henri*). Das Verhältnis von Kapital, Geld und Güterwelt: *Spiethoff* (*Arthur*). Die Nachlasssteuer als Erzieherin: *Heile* (*Paul*). Uneinlösliches Girogeld im Kriegsfalle: *Neurath* (*Otto*). Das Problem gesetzlicher Aufnahme der Barzahlungen in Österreich-Ungarn: *Mises* (*Ludwig von*). Österreich und Ungarn. Eine sozialhistorische Studie: *Bunzel* (*Julius*). Der gegenwärtige Umschwung wirtschaftlicher Anschauungen in England und das britische Patentgesetz von 1907: *Damme* (*Felix*). Serbische Wirtschafts- und Finanzverhältnisse: *Kreuzkam* (*Theodor*). Karl Theodor von Inama-Sternegg: *Mischler* (*Ernst*). Die Bevölkerung tropischer Kolonien, insbesondere Deutsch-Ostafrikas: *Eckert* (*Christian*). Das englische Kindergesetz. Ein Beitrag zur sozialen Theorie der Kinderrechte: *Simon* (*Helene*). Landwirtschaft und Gesetzgebung: *Rudloff* (*Hans L.*).

Jahrbücher für Nationalökonomie und Statistik (*Conrad's*), 1909—

July—Die Ziele der statistischen Vorgangs- und Zustandsbeobachtung: *Seutemann* (*Karl*). Die wirtschaftliche Gesetzgebung der deutschen Bundesstaaten im Jahre 1908. Die österreichische Enquête über die Landesfinanzen. (März 1908): *Kleinwächter* (*Friedrich*). Die Entwickelung des Preisniveaus in den letzten Dezennien und der deutsche und englische Getreidebedarf in den letzten Jahren. Oeffentliche Säuglingsfürsorge und Sterblichkeitsstatistik: *Fischer* (*Alfons*). Zusätze zu diesem Aufsatz: *Seutemann* (*Karl*). Die Geschichte und der heutige Stand des Streites über die Grundlagen der deutschen Wehrkraft: *Meyer* (*Otto*).

GERMANY—*Contd.*

Jahrbücher für Nationalökonomie und Statistik (*Conrad's*), 1909—*Contd.*

August—Die Reichsversicherungsordnung: *Wagner* (*Moritz*). Eine Kolonisationsgesetzvorlage im ungarischen Reichstage: *Schneider* (*Al.*). Böhm-Bawerks kapitalistischer Produktionsprozess: *Zankoff* (*Alexander Z.*). Neuzeitliche Entwickelung der Kieler Stadtwirtschaft: *Trautmann* (—). Frauenbewegung und Frauenorganisationen: *Meyer* (*Maximilian*). Der Nebenverdienst: *Müller-Wernberg* (—). Ueber die Neuordnung der Agrarstatistik in Italien: *Turroni* (*Dr. C. Bresciani*).

Vierteljahrshefte zur Statistik des Deutschen Reichs, 1909. *Heft* 3—Dampfkessel-Explosionen 1908. Spielkarten-Fabrikation und Versteuerung 1908. Kriminalstatistik (Heer und Marine) 1908. Herstellung und Besteuerung von Zigaretten, Zigarettentabak und Zigarettenhüllen im deutschen Zollgebiete 1908. Die Schiffsunfälle an der deutschen Küste 1903-07. Bestand der deutschen Kauffahrteischiffe am 1. Januar 1909. Zoll- und Steuerstraffälle 1908.

Zeitschrift für Socialwissenschaft. *Heft* 7—8, 1909—Zwischenstaatliche Wanderung und Ungleichheit der Menschenrassen: *Waltershausen* (*Dr. A. S.*). Zur Kritik der Marx'schen Grundrententheorie: *Daniel* (*Arnold*). Steht die deutsche Landwirtschaft unter dem Drucke des Gesetzes vom abnehmenden Bodenertrag? *Rybark* (*Josef*). Die Beziehungen zwischen Geburtenhäufigkeit und Säuglingssterblichkeit in Preussen: *Hillenberg* (*Dr.*).

Zeitschrift für die gesamte Staatswissenschaft. *Heft* 3, 1909—Adam Müller, die historische Weltanschauung und die politische Romantik: *Dombrowsky* (*Alexander*). Der mittlere und niedere landwirtschaftliche Unterricht in Deutschland. II.: *Hey* (*Karl*). Der Aufsichtsrat als Verwaltungsorgan der Aktiengesellschaft: *Passow* (*Richard*). Die kriminelle Bedeutung des Wanderproblems in Oesterreich: *Herz* (*Hugo*).

Zeitschrift für Versicherungs-Wissenschaft. *July*, 1909.—Zur Kritik der Reichsversicherungsordnung: *Stier-Somlo* (*Dr.*). Die Altersverteilung und die Sterblichkeit der pensionierten evangelischen Geistlichen in Preussen: *Pietsch* (*Dr.*). Versicherungsantrag und Versicherungsschein im Lichte des neuen Gesetzes über den Versicherungsvertrag unter besonderer Berücksichtigung der Feuerversicherung: *Worms* (*Dr.*). Heimarbeiter und Hausgewerbetreibende in der Kranken-, Unfall-, und Invalidenversicherung: *Köbke* (*Dr.*). Die Viehversicherung in Frankreich: *Ehrlich* (—).

Zeitschrift des Königlich Preussischen Statistischen Landesamts, 1909—

Abth. I—Erfahrungen und Beobachtungen bei der Berufs- und Betriebszählung vom 12. Juni, 1907.

Abth. II—Die auf den Inhaber lautenden Schuldverschreibungen der preussischen Kreis- und Provinzialverbände sowie der provinziellen usw. Kreditanstalten am Schlusse des Rechnungs bezw. Geschäftsjahres 1903: *Tetzlaff* (*Dr. Oskar*).

ITALY—

Giornale degli Economisti, 1909—

June—Il settantacinquesimo anniversario di Leone Walras. Apprezzamenti di teorie matematiche: *Edgeworth* (*F. Y.*). Note sulla curva Paretiana dei redditi: *Furlan* (*V.*). Appunti sulla teoria delle distribuzioni di frequenze: *Bresciani* (*C.*).

July—Ferrovie di stato e finanza in Italia: *Trevisonno* (*N.*). Il programma dell' amministrazione per le tasse sugli affari: *Tangorra* (*V.*). Gli incrementi di valore nelle azioni industriali e il sistema tributario italiano: *Griziotti* (*B*).

Riforma Sociale. July—August, 1909—Il problema forestale italiano e il congresso nazionale di Bologna. L'emigrazione italiana a Parigi: *Gorrini* (*Giovanni*). Programmi, voti ed eletti nei comizi politici del 1909: *Schiavi* (*Alessandro*). Il rincaro delle pigioni nella capitale: *Garino* (*Attilio*).

Rivista Italiana di Sociologia. March—April, 1909—Le leggi dell' evoluzione sociale: *Xénopol* (*A. D.*). L' origine degli usi civici in Sicilia: *Salvioli* (*G.*).

SWITZERLAND—

Journal de Statistique Suisse, 1909—*Lief.* 5—Protokoll der Jahresversammlung des Verbandes schweizerischer amtlicher Statistiker und der schweizerischen statistischen Gesellschaft, vom 28. und 29. September 1908, in Herisau. Statistique fédérale des poursuites pour 1902. Résultats de l'examen des aptitudes physiques des recrues en automne, 1907. Die Heimarbeit im Kanton St. Gallen: *Gross* (*Paul*). Die aargauische Hausindustrie: *Näf* (*E.*).

QUARTERLY LIST OF ADDITIONS TO THE LIBRARY.

During the Quarter ended 15th September, 1909, the Society has received the publications enumerated below. The titles are arranged alphabetically by subjects (works of a general nature coming first) under the following heads:—(a) Foreign Countries; (b) India and Colonial Possessions; (c) United Kingdom and its Divisions; (d) Authors, &c.; (e) Societies, &c. (British); (f) Periodicals, &c. (British).

(a) Foreign Countries.

Argentine Republic—

Anuario de la Dirección General de Estadística correspondiente al año 1907. Tomo 3, 8vo. 1909	The Director-General of Statistics
Agriculture. Ministerio de Agricultura. Boletín mensual de estadística agricola. (Current numbers.) 8vo. 1909	The Ministry of Agriculture
Buenos Ayres (*Province*). Boletín mensual de la Dirección General de Estadística. (Current numbers.) Fol. 1909	The Provincial Statistical Bureau
Santa Fé. Boletín de estadística municipal. (Current numbers.) Fol. 1909	The Municipal Statistical Bureau
Banco Español del Rio de la Plata. Report and general balance sheet of the head office and branches for year ended 30th June, 1909. Fol. 1909	The London Office

Austria-Hungary—

Österreichisches Wirtschaftspolitisches Archiv (vormals "Austria"). (Current numbers.) 8vo. 1909	The Ministry of Commerce
Statistische Monatschrift. (Current numbers.) 8vo. 1909	The Central Statistical Commission
Agriculture. Statistische Nachrichten aus dem Gesammtgebiete der Landwirtschaft. (Current numbers.) 8vo. 1909	
Education. Statistik der Unterrichtsanstalten in den im Reichsrate vertretenen Königreichen und Ländern für das Jahr 1905-06. Fol. 1909........	
Finance. Beiträge zur Statistik der Personaleinkommensteuer in den Jahren 1903 bis 1907. Insbesondere Quellen und Höhe des Einkommens nach Geschlecht und Beruf der Zensiten im Jahre 1903. 2 vols. La fol. 1908	The Ministry of Finance
—— Mitteilungen des k.k. Finanzministeriums. Jahrg. 15, Heft 1. 8vo. 1909	
Labour. Bericht über die Tätigkeit des k.k. arbeitsstatistischen Amtes im Handelsministerium während des Jahres 1908. 26 pp., 8vo. 1909	The Austrian Labour Department
Mining. Statistik des Bergbaues in Österreich für 1908. Lief. 1, Die Bergwerksproduktion. 8vo. 1909	The Ministry of Public Works
Railways. Österreichische Eisenbahnstatistik für das Jahr 1907. Teil 2, Kleinbahnen und diesen gleichzuhaltende Bahnen sowie Schleppbahnen. Fol. 1909	The Ministry of Railways
—— Bericht über die Ergebnisse der k.k. Staatseisenbahn-Verwaltung für das Jahr 1908. 4to. 1909	

(a) **Foreign Countries**—*Contd.*

Austria-Hungary—*Contd.*

Trade. Berichte über die Handelsbewegung sowie Bewertung der im Jahre 1907 ein- und ausgeführten Waren des Vertragszollgebietes der beiden Staaten der Österr.-Ungar. Monarchie. 8vo. 1909	The Commission for Customs Values
—— Statistik des auswärtigen Handels des Vertragszollgebiets der beiden Staaten der Österr.-Ungar. Monarchie im Jahre 1907. III. Band (Hauptergebnisse, Verkehr mit den einzelnen Herkunfts- und Bestimmungsländern). 8vo. 1909	The Ministry of Commerce
Budapest—	
Monatshefte des Budapester Communal-Statistischen Bureaus. (Current numbers.) 1909	The Municipal Statistical Bureau
Wochenausweis des Budapester Communal-Statistischen Bureaus. (Current numbers.) 1909	

Belgium—

Annuaire statistique de la Belgique. 39e année. 1908. 8vo. 1909	The Administration of General Statistics
Bulletin de la Commission Centrale de Statistique. Tome 20. Années 1907 et 1908. 4to. 1909	
Labour. Fabrication des explosifs et industries connexes. Fabrication des allumettes. 8vo. 1909	The Belgian Labour Department
Mines. Annales des mines de Belgique. Année 1909. 3e Livraison. 8vo. 1909	
Trade. Tableau général du commerce avec les pays étrangers pendant 1908. Fol. 1909	The Administration of General Statistics
Académie royale de Belgique. Bulletin de la classe des lettres. (Current numbers.) 8vo. 1909	The Academy

Brazil—

Rio Grande do Sul. Estado do—	
Boletim da Directoria de estatistica (Seccao demographica). Anno 1, 1908. 8vo. 1908	The State Statistical Bureau
Relatorio apresentado ao Director-Geral da Reparticao do Archivo publico, Estatistica e Bibliotheca pelo Chefe de seccao de Estatistica em 10 Junho de 1908. Fol. 1908	
Brazilian Review. (Current numbers.) Fol. 1909	The Editor

Bulgaria—

Bulletin mensuel de la Direction générale de statistique du royaume de Bulgarie. (Current numbers.) 4to. 1908	The Statistical Bureau
Agriculture. Statistique agricole (ensemencement et récolte) pour l'année 1905. Vol. i: Résultats par départements et arrondissements. 60 pp., 4to. 1909 (Another copy presented by Major Craigie.)	
Births, &c. Mouvement de la population pendant l'année 1903. 2e partie. Résultats par arrondissements et départements. 4to. 1908	Major P. G. Craigie
Élections. Statistique des élections des députés pour la 13e Assemblée nationale ordinaire 4to. 1909....	The Statistical Bureau
Trade. Mouvement commercial de la Bulgarie avec les pays étrangers. 4e trimestre de 1908, 1er trimestre de 1909. 2 vols., 4to. 1909	

Chile—

Sinopsis Estadística i Jeográfica de la República de Chile en 1907. 8vo. 1909	The Central Statistical Bureau

(a) **Foreign Countries**—*Contd.*

China—	
Customs Gazette. (Current numbers.) 4to. 1909.... Post Office. Report on the working of the Imperial Post Office (1908), being Part i (B) of Returns of trade and trade reports for 1908. 4to. 1909 Trade. Returns of Trade and Trade Reports, 1908. Part i (A), Abstract of Statistics and Report on Foreign Trade of China. 4to. 1909	The Inspectorate-General of Customs, Shanghai
Colombia—	
Boletin del Ministerio de Relaciones Exteriores. Tome ii. No. 9, May, 1909. No. 10, June, 1909. 8vo. 1909	The Ministry
Cuba—	
Agriculture. Boletín oficial de la Secretaria de agricultura, industria y comercio. (Current numbers.) 8vo. 1909 Boletín oficial de la Secretaria de hacienda. Publicacion quincenal. Tomo i, No. 1. 8vo. 1909 Censo de la República de Cuba bajo la Administracion provisional de los Estados Unidos, 1907. 8vo. 1908	National Library, Havannah
Denmark—	
Agriculture. Arealets Benyttelse i Danmark den 15. Juli 1907. (Emploi de la terre en Danemark le 15 juillet 1907.) 4to. 1909	The State Statistical Bureau
Copenhagen. Borgerrepræsentant-Valgene i København den 12. Marts 1909. 28 pp., 8vo. 1909	The Municipal Statistical Bureau
Egypt—	
Statistical Yearbook of Egypt. 1909. 1st issue. La. 8vo. 1909	The Statistical Department, Ministry of Finance
Births, &c. Annual general return extracted from Statistical Yearbook of Egypt for 1909. 24 pp., fol. 1909 Births and Deaths in principal towns during 4th quarter, 1907-08. Obl. 4to. 1909	The Department of Public Health
Census of Egypt taken in 1907 under the direction of C. C. Lowis, Director-General of the Census Department. Fol. 1909	The Director-General
Shipping. Annual return of shipping, cargo and passenger traffic in the ports of Egypt and Suez Canal transits, 1908. Fol. 1909 —— 1st quarterly return of shipping, cargo and passenger traffic in the ports of Egypt and Suez Canal transits for 1909. 8vo. 1909	The Statistical Department, Ministry of Finance
France—	
Agriculture. Ministère de l'Agriculture. Bulletin mensuel de l'Office de renseignements agricoles. (Current numbers.) 8vo. 1909	The Ministry of Agriculture
—— Statistique agricole annuelle, 1906. 8vo. 1908....	Mr. I. P. A. Renwick
Finance. Ministère des Finances. Bulletin de statistique et de législation comparée. (Current numbers.) 8vo. 1909	The Ministry of Finance
Justice. Compte général de l'administration de la justice criminelle pendant l'année 1906. France-Algérie-Tunisie. 4to. 1908	The Ministry of Justice

(a) **Foreign Countries**—*Contd.*

France—*Contd.*	
Labour. Bulletin de l'Office du Travail. Années 1894-1907. 1. Liste par ordre chronologique des actes officiels concernant l'organisation du travail et la condition des travailleurs en France. 2. Table alphabétique des matières contenues dans les tomes i à xiv. 8vo. 1909 —— Conseil supérieur du Travail. 18e session. Novembre, 1908. Compte rendu. 4to. 1909	The French Labour Department
Trade. Commerce de la France. Documents statistiques [mensuels]. (Current numbers.) 8vo. 1909	The Director-General of Customs
Paris—	
British Chamber of Commerce, Paris. Monthly Circular. (Current numbers.) 4to. 1909	The Chamber
Société de Statistique de Paris. La Société de Statistique. Notes sur Paris, à l'occasion du Cinquantenaire de la Société et de la xiie session de l'Institut international de statistique. 8vo. 1909	The Society
Colonies—	
Statistiques du commerce des colonies françaises pour 1907. Tome 2, Colonies de l'Afrique occidentale: Statistiques générales de l'Afrique occidentale française: Sénégal et Haut-Sénégal et Niger—Guinée française. Côte d'Ivoire—Dahomey—Congo français et Dépendances. Tome 5, Colonies d'Amérique et d'Océanie — Saint Pierre et Miquelon—Guadeloupe—Martinique—Guayane française—Nouvelle Calédonie et Dépendances—Établissements français de l'Océanie. 2 vols., 8vo. 1909	The Colonial Minister, Paris
Madagascar et Dépendances. Statistiques générales. Situation de la Colonie au 31 Déc. 1906. 4to. 1908	The Board of Trade
La vie financière. Nos. for 9, 10, and 13 July, 1909. (Containing account of the meeting of the Int. Stat. Inst. in Paris, 1909)	The Editor
Germany—	
Statistisches Jahrbuch für das Deutsche Reich. Jahrgang 30, 1909. 8vo. 1909 Vierteljahrshefte zur Statistik des Deutschen Reichs. Heft 3. 4to. 1909 Census. Berufs- und Betriebszählung vom 12. Juni 1907. Gewerbliche Betriebsstatistik. Abt. I. Heft 1. Abt. III (Bundesstaaten). Heft 1. Abteilung V (Grossstädte). Heft 1. 3 vols., 4to. 1909	The Imperial Statistical Bureau
Health. Veröffentlichungen des Kaiserlichen Gesundheitsamtes. (Current numbers.) 8vo. 1909	The Imperial Health Bureau
Joint Stock Companies. Die Geschäftsergebnisse der deutschen Aktiengesellschaften im Jahre 1907-08. 41 pp., 4to. 1909 Labour. Erhebung über die Arbeitszeit im Binnenschiffahrtsgewerbe. Gutachten der Organisationen der Arbeitgeber und Arbeitnehmer im Binnenschiffahrtsgewerbe und Auskünfte der Krankenkassen im Binnenschiffahrtsgewerbe. Erstattet im Jahre 1909. Fortsetzung der Erhebung Nr. 7 vom Jahre 1907. Fol. 1909	The Imperial Statistical Bureau
—— 2. Sonderheft zum Reichs-Arbeitsblatte. Erhebung von Wirtschaftsrechnungen minderbemittelter Familien im Deutschen Reiche. Fol. 1909	Purchased

(a) **Foreign Countries**—*Contd.*

Germany—*Contd.*

Die Seeinteressen des Deutschen Reichs nebst dem Gesetzentwurf betreffend die Deutsche Flotte. 90 pp., 4to. 1897	Purchased
Die Steigerung der Deutschen Seeinteressen von 1896 bis 1898. vi + 92 pp., fol. 1898	
Prussia—	
Statistisches Jahrbuch für den Preussischen Staat. Sechster Jahrgang, 1908. 8vo. 1909	The Royal Prussian Statistical Bureau
Zeitschrift des K. Preussischen Statistischen Landesamts. (Current numbers.) Fol. 1909	
Preussische Central-Genossenschafts-Kasse. Mitteilungen zur deutschen Genossenschafts-Statistik für 1907. Fol. 1909	Dr. A. Petersilie
Saxony. Zeitschrift des K. Sächsischen Statistischen Landesamts. (Current numbers.) 4to. 1909	The Statistical Bureau of Saxony
Alsace-Lorraine. Statistisches Jahrbuch für Elsass-Lothringen, zweiter Jahrgang 1908. Herausgegeben vom Statistischen Bureau für Elsass-Lothringen, 1908. 8vo. 1908	The Statistical Bureau
Berlin. Prices. Preis-Zusammenstellungen des Statistischen Amts der Stadt Berlin. (Current monthly numbers.) Sheets. 1909	The Municipal Statistical Bureau
Düsseldorf—	
Statistische Monatsberichte der Stadt Düsseldorf. (Current numbers.) 4to. 1909	
Denkschriften des statistischen Amtes der Stadt Düsseldorf. Heft 1. I. Die Städtische Arbeitslosenbeschäftigung in Düsseldorf 1908-09. II. Zur Frage der Arbeitslosenversicherung. August, 1909. 18 pp., 4to. 1909	
Munich. Einzelschriften des Statistischen Amtes der Stadt München. Nr. 8. Lebensführung von 22 Arbeiterfamilien Münchens, von *Dr. Else Conrad* 80 pp., 8vo 1909	
Deutscher Verein für Versicherungs-Wissenschaft. Zeitschrift für die gesamte Versicherungs-Wissenschaft. Band 9. Heft 3, July, 1909. 8vo. 1909	The Society
Verein für Socialpolitik—	
Die Entwicklung der Gemeindebetriebe in Deutschland und im Ausland. Materialien für die Generalversammlung des Vereins für Sozialpolitik in Wien vom 27. bis 29. September 1909. Zusammengestellt von *Carl J. Fuchs.* 8vo. 1909	Purchased
Die Gemeindebetriebe der Stadt Düsseldorf. Von *Otto Most.* Der Gemeindebetrieb. Band ii, Teil 2. 8vo. 1909	
Die Gemeindebetriebe der Städte Magdeburg, Naumburg a. S., Frankfurt a. M. Von *O. Landsberg, E. W. Schiele, Aug. Busch.* Der Gemeindebetrieb. Band ii, Teil 3. 8vo. 1909	
Die Gemeindebetriebe Mannheims. Von *Otto Moericke.* Der Gemeindebetrieb. Band ii, Teil 4. 8vo. 1909	
Schriftliche Referate für die Generalversammlung des Vereins in Wien, 27.-29. Sept. 1909, über die Produktivität der Volkswirtschaft und über die wirtschaftlichen Unternehmungen der Gemeinden. 8vo. 1909	

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Germany—*Contd.*	
Deutscher Universitäts-Kalender. Sommer-Semester 1908. 2 vols., 12mo. 1908	Mr. I. P. A. Renwick
Jahrbuch der Statistik. Eine internationale Übersicht der statistischen Verwaltung und Wissenschaft. Jahrgang 1, 1909. 8vo. 1909	M. Karl J. Trübner, Strassburg
Greece—	
Bulletin trimestriel du commerce spécial de la Grèce. (Current numbers.) 4to. 1909	The Bureau of Statistics, Ministry of Finance
Italy—	
Births, &c. Movimento della popolazione segondo gli atti dello stato civile nell' anno 1907. 8vo. 1909	The Director-General of Statistics
Finance. Bollettino di legislazione e statistica doganale e commerciale. (Current numbers.) 8vo. 1909	The Director-General of Customs
Health. Bollettino sanitario. (Current numbers.) 8vo. 1909	The Director-General of Statistics
Labour. Bollettino dell' Ufficio del lavoro. May—June, 1909. 8vo. 1909	The Italian Labour Department
Navy. Ministero della marina. Ispettorato di sanità. Statistica sanitaria dell' armata per gli anni 1901 e 1902. Fol. 1909	The Director-General of Statistics
Sickness. Statistica dei ricoverati in Ospedali e in altre istituti di assistenza pubblici e privati nell' anno 1907. 8vo. 1909	
Shipping. Movimento della Navigazione del Regno d' Italia nell' anno 1907. Parts 1 and 2 of vol. 2. Fol. 1909	The Director-General of Customs
Trade. Movimento commerciale del Regno d' Italia nell' anno 1907. Vol. 2, Parts i—iii. Fol. 1909	
—— Movimento commerciale del Regno d' Italia nell' anno 1908. Parte Prima (in 3 vols.) Parte Seconda (Vol. i). Fol. 1909	
Colonies, &c.—Massawah. Movimento commerciale e della navigazione di Massaua nell' anno 1907. Fol. 1909	
Japan—	
Ninth Financial and Economic Annual of Japan. 1909. The Department of Finance. La. 8vo. 1909	The Japanese Financial Commissioner, London
The Japan financial and economic monthly. (Current numbers.) 8vo. 1909	The Liberal News Agency, Tokio
Finance. Monthly Journal of the Monopoly Bureau of the State Department of Finance. Tokio. (In Japanese.) 8vo. 1909	The Bureau
Mexico—	
Finance. Estadística fiscal. Datos relativos. (Current numbers.) Fol. 1909	The Director-General of Statistics
Trade. Importacion y Exportacion de la República Mexicana. Año de 1906. 8vo. 1909	
Netherlands—	
Annuaire Statistique des Pays-Bas. Les colonies. 1907. 8vo. 1909	The Central Statistical Bureau
Revue mensuelle du Bureau Central de Statistique. (Current numbers.) 8vo. 1909	
Elections. Statistiek der periodieke verkiezingen voor de Tweede Kamer der Staten-Generaal, gehouden in 1909. 8vo. 1909	

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Netherlands—*Contd.*

Finance. Statistiek der Gemeentelijke- en Provinciale financiën over 1906. 8vo. 1909	The Central Statistical Bureau
—— Statistique des impôts et autres revenus du Royaume pour 1907, comprenant un aperçu graphique du montant des impôts et de quelques autres revenus sur les années 1831-1907. 4to. 1909	
Justice. Crimineele Statistiek over het Jaar 1907. 4to. 1909	
Maandcijfers. No. 21. Jaar 1908 en de eerste maanden van 1909. 8vo. 1909	
Property. Statistiek van het Grondkrediet over de Jaren 1901 tot en met 1907. 4to. 1909	

Nicaragua—

Boletín de estadística de la República. Año II. No. 7. Fol. 1909	The Director-General of Statistics

Norway—

Journal du Bureau Central de Statistique. (Current numbers.) 8vo. 1909	The Central Statistical Bureau

Paraguay—

Memoria del Ministerio del Interior. 1906-7. Tomos 1, 2. 2 vols., 8vo. 1908	The Central Statistical Bureau
Mensaje del Presidente de la República. 42 pp., 8vo. 1909	

Roumania—

Bulletin statistique de la Roumanie. Série III. Année 1909. No. 1. 8vo. 1909	The Statistical Bureau, Ministry of Agriculture
Moniteur commercial roumain. Organe officiel du Ministère de l'industrie et du commerce. (Current numbers.) Fol. 1909	The Ministry
Births, &c. Bulletin mensuel du mouvement de la population dans les villes. (Current numbers.) Sheets. 1909	The Statistical Bureau, Ministry of Agriculture
Trade. Commerce extérieur de la Roumanie et mouvement des ports en 1907. 4to. 1909	The Statistical Bureau, Ministry of Finance

Russia—

Agriculture. Year-book of the Department of Agriculture for 1908, Part 6. For 1909, Parts 1 and 2. (In Russian.) 8vo. 1909	The Department.
Prices of grain at ports. Return of (in Russian). Sheets. (Current numbers.) 1909	The Ministry of Finance
Trade Returns. (European and Asiatic Frontiers) for 1907. Vols. 1-3. 3 vols., fol. 1909. (In Russian)	The Department of Customs
St. Petersburg—	
Bulletin hebdomadaire du Bureau de Statistique. (Current numbers.) 4to. 1909	The Municipal Statistical Bureau
Bulletin mensuel du Bureau de Statistique. (Current numbers.) 4to. 1909	
Kazan University. Bulletin of the. (Current numbers.) (In Russian.) 8vo. 1909	The University
Moscow. Bulletin statistique mensuel de la Ville. (Current numbers.) 8vo. 1909	The Municipal Statistical Bureau

(a) Foreign Countries—*Contd.*

Salvador—

Boletín del Consejo superior de Salubridad. Publicacion mensual. (Current numbers.) 8vo. 1909	The Department of Health
Dirección general de estadística. Monografias departamentales 1. Departamento de Usulutan. 8vo. 1909	The Statistical Bureau

Spain—

Births, &c. Movimiento natural de la población, 1904. 4to. 1909	The Geographical and Statistical Institute
Finance. Estadística del impuesto de transportes por Mar, &c. No. 37. Segundo Trimestre de 1909. 8vo. 1909	The Director-General of Customs
Trade. Memoria sobre el estado de la renta de aduanas en 1908. 8vo. 1909	
—— Tablas de valores para la importacion y exportacion de mercancias del año de 1908. Edicion oficial. 8vo. 1909	

Sweden—

Bidrag till Sveriges Officiella Statistik—	
B. Rättsväsendet, 1907. (Justice.) 4to. 1909	The Central Statistical Bureau
E. Sjöfart, 1907. (Shipping.) 4to. 1909	
F. Handel, 1907. (Trade.) 4to. 1909	
K. Hälso-och Sjukvården, 1907. (Public Health.) 4to. 1909	
R. Valstatistik, 1906-08. (Elections.) 4to. 1909	
Statistisk Tidskrift. 8vo. 1908-09	
Banks. Sammandrag af de enskilda sedelutgifvande bankernas. (Current numbers.) 1909	
—— Sammandrag af Riksbankens Ställning. (Current numbers.) 1909	
—— Ofversikt af de solidariska bankbolagens . . . för år 1908. fol. 1909	
Finance. Riksstat för år 1910. sm. 4to. 1909	
Insurance. Försäkringsinspektionens underdåniga Berättelse beträffande Försäkringsväsendet i Riket år 1907. I. 8vo. 1909	University of Upsala
Labour. Meddelanden fran k. Kommerskollegii Afdelning för Arbetsstatistik. (Current numbers.) 8vo. 1909	The Central Statistical Bureau
—— Arbetsstatistik. A. 8. Utländska Jordbruksarbetare i Sverige, år 1907. 8vo. 1909	University of Upsala
—— Arbetsstatistik. B. 7. Registrerade Sjukkassors Verksamhet år 1907. 8vo. 1909	
—— Der Generalstreik in Schweden, seine Voraussetzungen und Entwicklung. 8 pp., 8vo. 1909	The Swedish Labour Department
Railways. Godstrafiken å Statens Järnvägar, år 1907. 4to. 1909	The Central Statistical Bureau
Stockholm—	
Bulletin mensuel du Bureau de Statistique de la ville. (Current numbers.) 8vo. 1909	The Municipal Statistical Bureau
Quelques données statistiques publiées à l'occasion de la visite parlementaire française le 21–23 Juillet 1909. 8vo. 1909	
Sveriges Jordbruk vid 1900 Talets Början Statistiskt Kartverk utarbetadt af Wilhelm Flach, H. Juhlin Dannfelt, Gustav Sundbärg. L'Agriculture en Suède au commencement du XX$^{\text{eme}}$ siècle. La. fol. 1909	The Royal Academy of Agriculture

(a) **Foreign Countries**—*Contd.*

Switzerland—

Annuaire statistique de la Suisse. 17^e^ année. 1908. 8vo. 1909	The Federal Statistical Bureau
Assurance. Rapport du Bureau fédéral des assurances sur les entreprises privées en matière d'assurances en Suisse en 1907. 4to. 1909	The Bureau
Schweizerischer Handels- und Industrie-Verein. Bericht über Handel und Industrie der Schweiz im Jahr 1908. 4to. 1909	The Association
Basel. Die Statistisch-Volkswirtschaftliche Gesellschaft von Basel. 1870–1909. 59 pp., 8vo. 1909	The Society

United States—

Statistical Abstract of the United States. 1908. 31st Number. 8vo. 1909	Department of Commerce and Labor
Agriculture, Department of.	
Crop reporter. (Current numbers.) 4to. 1909	The Department
Cost of producing farm products, methods of investigation, cost of growing Minnesota field crops, 1902, 1903, 1904. 90 pp., 8vo. 1906	
National forests and the lumber supply. 6 pp., 8vo. 1906	
The dairy industry in the South. 37 pp., 8vo. 1909	
Census Bureau. Bulletins:—	
98. Thirteenth Census: taken in 1910. Supervisors' Districts. 4to. 1909	The Bureau
99. Electrical industries of Porto Rico, 1907. 4to. 1909	
100. Cotton Production, 1908. 4to. 1909	
101. Industrial Districts, 1905, Manufactures and Population. 4to. 1909	
Commerce and Finance. Monthly summary. (Current numbers.) 4to. 1909	Department of Commerce and Labor
Customs Tariff. Bureau of Manufactures. Tariff series, No. 22, Proposed new customs tariff of Argentina. 3 pp., 8vo. 1909	The Bureau
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Labour Reports, &c.—From Austria-Hungary, Belgium, France, Germany, United States, Massachusetts and New York States, Canada, New Zealand, and United Kingdom.

Trade Returns—From Argentina, Austria-Hungary, Belgium, Bulgaria, China, Egypt, France, Germany, Greece, Italy, Mexico, Netherlands, Roumania, Russia, Spain, Sweden, Switzerland, United States, India, Australia, and United Kingdom.

Vital Statistics—From Argentina, Egypt, Germany, Italy, Netherlands, Roumania, Switzerland, United States (California, Connecticut, and Michigan only), Queensland, South Australia, and United Kingdom.

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The weekly, monthly, or quarterly issues of the following periodicals, &c., have also been received during the past quarter. They are arranged under the names of the countries in which they are published:—

Denmark—Nationalökonomisk Tidsskrift.

France—Annales des Sciences Politiques. Économiste Français. Journal des Économistes. Monde Économique. Polybiblion, Parties Littéraire et Technique. Réforme Sociale. Le Rentier. Revue d'Économie Politique. Revue de Statistique. Journal de la Société de Statistique de Paris.

Germany—Allgemeines Statistisches Archiv. Archiv für Rassen- und Gesellschafts-Biologie. Archiv für Sozialwissenschaft und Sozialpolitik. Jahrbuch für Gesetzgebung, Verwaltung, und Volkswirtschaft. Jahrbücher für Nationalökonomie und Statistik. Kritische Blätter für die gesamten Socialwissenschaften. Zeitschrift für die gesamte Staatswissenschaft. Zeitschrift für die gesamte Versicherungs-Wissenschaft. Zeitschrift für Socialwissenschaft. Mittheilungen aus der Handelskammer Frankfurt a. M.

Italy—L'Economista. Giornale degli Economisti. Rivista Italiana di Sociologia. Riforma Sociale. Società Umanitaria, Bollettino mensile.

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United States—Bankers' Magazine. Bradstreet's. Commercial and Financial Chronicle, with supplements. Duns' Review. Journal of Political Economy. Political Science Quarterly. Quarterly Journal of Economics. Yale Review. American Academy of Political and Social Science, Annals. American Economic Association, Publications. American Geographical Society, Bulletin. American Statistical Association, Quarterly Publications. American Philosophical Society, Proceedings and Transactions. Columbia University, Studies in History, &c.

Canada—British Columbia Mining Record. Canadian Life and Resources.

India—Indian Engineering.

New Zealand—Government Insurance Recorder. Trade Review and Price Current.

United Kingdom—The Accountant. Accountants' Magazine. Agricultural Economist. Athenæum. Australian Trading World. Bankers' Magazine. Broomhalls' Corn Trade News. Browne's Export List. Colliery Guardian. Commercial World. Economic Journal. Economic Review. Economist. Farm and Garden. Financial Review of Reviews. Fireman. Illuminating Engineer. Incorporated Accountants' Journal. Insurance Record. Investors' Monthly Manual. Investors' Review. Joint Stock Companies' Journal. Labour Co-partnership. Licensing World. Machinery Market. Nature. Navy League, Journal. Policy-Holder. Post Magazine. Public Health. Publishers' Circular. Sanitary Record. Shipping World. Statist. The Times. Anthropological Institute, Journal. Cobden Club, Leaflets. East India Association, Journal. Howard Association, Leaflets, &c. Institute of Actuaries, Journal. Institute of Bankers, Journal. Institution of Civil Engineers, Minutes of Proceedings. Iron and Steel Institute, Journal. Lloyd's Register of British and Foreign Shipping, Statistical Tables. London Chamber of Commerce, Journal. London University Gazette. Manchester Literary and Philosophical Society, Memoirs and Proceedings. Royal Agricultural Society, Journal. Royal Colonial Institute, Proceedings and Journal. Royal Geographical Society, Geographical Journal. Royal Irish Academy, Proceedings and Transactions. Royal Meteorological Society, Meteorological Record and Quarterly Journal. Royal Society, Proceedings. Royal United Service Institution, Journal. Sanitary Institute, Journal. Society of Arts, Journal. Statistical and Social Inquiry Society of Ireland, Journal. Surveyors' Institution, Professional Notes and Transactions. Trade Circulars.

Vol. LXXII.] [Part IV.

JOURNAL
OF THE ROYAL STATISTICAL SOCIETY.

DECEMBER, 1909.

The RECENT GROWTH *of* POPULATION *in* WESTERN EUROPE; *an* ESSAY *in* INTERNATIONAL COMPARISON.

The INAUGURAL ADDRESS *of the* PRESIDENT, SIR J. A. BAINES, C.S.I., DELIVERED *before the* ROYAL STATISTICAL SOCIETY, 16TH NOVEMBER, 1909.

> "The true greatness of a State consisteth essentially in population and breed of men."—BACON.

I HAVE, in the first place, to express my hearty thanks to Fellows of the Society for the honour they have done me in electing me to fill this chair. It has been our custom of late years to seek our President alternately from amongst those who, from their reputation outside, confer lustre upon us, and from those in our midst, who derive their lustre from their connection with us. In the latter case, which is my own, the appointment contains no element of novelty, as the capacity and limitations of your nominee are well known to his colleagues. I will only add that I will do what I can to continue, as President, the efforts I have made to serve the interests of the Society in less distinguished offices.

In referring to the events of last session, I am first obliged to regretfully mention the loss we have sustained in the death of our two esteemed comrades, Mr. Hendriks and Mr. Wilson Fox. The former was one of the *doyens* of the Society, and though he had ceased to contribute papers, he was a frequent attendant at those of others, and, by his experience and wide knowledge, was a most instructive and pleasant companion at the Club and on our trips abroad to the Congress of the International Institute. Our younger friend shared the reputation of Mr. Hendriks for good fellowship, tact, and courtesy, qualities which in his department of the Government service made him an admirable diplomatist in the negotiations with outside interests so important in the work of the Board of Trade; and, had he lived, he would certainly have been a worthy successor to the two of his late chiefs still happily amongst us. Mr. Czarnikow and Mr. Whittall, who have also passed away, were less widely known in the Society; but the one was a useful and genial link with the business interests he represented, and the other for many years rendered excellent services to the Society as Assistant Secretary. In regard to the work done last session, the two most prominent features were the attention drawn to the need of improvement of official statistics, and the suggestions of the Census Committee as to the enumeration of this kingdom and other British States. In the former, my predecessor took a keen and active interest, of which the fruits will, I hope, be seen before long, and the subject must not be allowed to drop out of sight. I would suggest, for instance, that one of our Fellows should illustrate, by the co-ordination of the material now independently handled by different offices, the better statistical use that might be made of what is already available. The Census Committee has been lucky enough to get its views before the authorities in good time. Communications have been opened with the statistical officials of various States, and consideration has been given to our reports by the Colonial Office, with the view of securing as much uniformity as possible in the proceedings of the Crown Colonies. More important and satisfactory to us is the appointment of so sympathetic and able a statistician as Mr. Bernard Mallet to the post of Registrar-General of England, through whom, we are convinced, our views will meet with adequate and impartial consideration.

As to the immediate future, we do not propose to change our abode, nor has it been found advisable to enter into building operations to extend our premises. We propose to make the Council Room more suitable for readers consulting our Library, and to hold the Ordinary meetings in some adjacent building, more comfortable than the room we have been using for some years past. We have introduced certain changes into the Journal, in order to render it more comprehensive in scope and a better compendium of contemporary statistical literature. For this purpose it has been thought advisable to appoint an Assistant Secretary of literary acquirements to supplement the work which the Honorary Secretaries are able to perform, and generally to look after the publication. In Mr. Kohan, selected by the Council for this post, we say with confidence that the right man has been found. Other proposals tending to the greater popularity of the Society will shortly be circulated for the opinion of our colleagues, whose co-operation I most earnestly solicit in the maintenance of our position amidst all the competition of more modern societies, and the lucrative attractiveness of periodicals, which gladly open their pages to papers on the subjects this Society devotes itself to elucidating. I would remind you of a remark made by my predecessor in one of his Addresses, that at no time was a competent knowledge and use of statistics more needed than at present by legislators who had constantly before them new projects of social reform, all of which called for the test which statistical handling alone can apply. Whilst endorsing this, I express a hope that my colleagues will agree that now is the time for the Society to come to the front and show the practical value of scientific treatment of figures by providing papers on some of the important questions of the day.

With these remarks upon what I may term our domestic affairs, I proceed to address you, in accordance with custom, upon a subject of wider statistical interest:—

A few years ago I had occasion to look into the age-returns of certain countries in both the Old and the New World, and in the course of my search for the special information I wanted I got interested in other features of the returns of which, like other students of this branch of statistics, I had some general notion, but had not reduced it to a definite or comparative form. When, therefore, I received the honour of being called to this Chair and had to choose a subject upon which to address the Society, I had recourse to the material and notes I had already collected, and proceeded upon what I may call a fishing excursion amongst them, with an arithmometer—and an open mind. The water is excellent, but, as many of my colleagues well know, it is too extensive to be worked thoroughly single-handed, and I have contented myself, accordingly, with a few casts over the most likely pools. I now empty my creel before you, so that there can be no question of the exercise of the proverbially vivid imagination of those who neither spare the rod nor spoil the story. I only hope that my efforts may meet with an appreciation on the part of the Society not less considerate than that accorded by another scientific body to the celebrated essay of its founder on the Theory of Tittlebats.

I have restricted my survey to the population of the sixteen countries which constitute Western Europe in a statistical as well as a geographical sense. The returns for what the late Sir W. White used to call Europe, S.E., are highly interesting, if only from their contrast to those with which I am concerned, and I was tempted to follow the example of my predecessor, Sir Rawson Rawson, and include them in my review. On the whole, however, I do not consider that the returns from these States, based upon comparatively recent registration and enumeration, ought at present to be brigaded in line with the results of the longer established systems of the West. The marked racial differences, too, would entail an amount of comment unsuitable on this occasion, and for this reason I have also excluded from the scope of the review the returns for what may be termed the half-way States of Hungary, Galicia and Poland.

The population with which I am dealing amounted in 1900 to about 239,000,000, distributed as shown in Table I of the Appendix. For purposes of comparison it is necessary to classify the States into groups, using the general total merely as an arithmetical standard by which to indicate divergence of the units. A glance over the returns suggests the general outline of the classification, which for the most part is in accordance with the geographical position. Scandinavia, for instance, stands apart, and, by the exclusion of Galicia, though allowing the admission of Bohemia, the West Central States, with Great Britain, constitute a fairly homogeneous body, mainly Teutonic in race. If Ireland be set on one side, the remaining States form a Latin group. Here, however, it is advisable to discriminate on a basis other than racial or geographical. The title of this review implies a population in progressive *movement*, whilst the Table just referred to shows that that of France is almost stationary, and its weight in the scale is enough materially to affect the totals if included with Italy, Spain and Portugal. I have, therefore allotted this country a place with Ireland, another of the non-progressive populations, though in a cross-grouping I have usually replaced France with its racial companions.

For the purposes of comparison, the populations enumerated at the Census have been calculated to the uniform dates of December, 1870, and the same month in 1900. At the former time the Central group contained 48 per cent. of the population, the Southern 25 per cent.; Scandinavia accounted for 5 per cent., and 22 per cent. appertained to the two non-progressive States. The lapse of thirty years brought the Central up to a proportion of 53 per cent.; the rise in the relative position of Scandinavia was but fractional; the South fell a point, and France and Ireland went down to 18 per cent. Thus, excluding Ireland, the only population actually decreasing, the Teutonic element rose from 53 to 58 per cent., and the Latin fell from 44 to 40 per cent. This shifting of the balance is the cumulative result of a movement varying greatly in intensity in the different countries, but in general conformity with the racial and geographical grouping above described. The percentage of increase in the Central zone is twice that in the Southern, and six times that in France; and in Scandinavia, too, the growth fell but little short of a third. The statistical advantage of segregating from its neighbours the large population of France is shown by the fact that its inclusion reduces the thirty years' increase in the former from 19 to 13 per cent. In Ireland population decreased by over 17 per cent. Setting these two countries on one side, the general increase was just under 31 per cent., a moderate rate, which is conventionally held to have been "normal" for the last century;

but to this I shall have to refer later. In regard to individual countries, all I need say at present is, that if we except Portugal, the earlier enumerations of which were little more than tentative, the lowest increase in the Northern section of my survey is above the highest in the Southern.

The figures on which I have been commenting above are intended to show only the general trend of the movement of population, and for that purpose the percentage of variation for the entire period covered is enough. In treating of the relative extent of the movement in the different countries, however, I have taken the mean population between each census as the basis, and, since the enumerations were not synchronous, the annual rate of variation is substituted for the relative growth of the thirty years in the aggregate. In dealing with this part of the subject, it is as well to discriminate from the outset between the two forces, or influences, of which the numbers established by the census are the resultant; first, the natural movement, due to the difference between the numbers of those who enter life and those who leave it; and, secondly, the voluntary movement of the living from one country to another. Of the latter we have no adequate record, but the registration of births and deaths has been in force throughout the period I am covering, except in Spain and Portugal for some of the earlier years. The number of persons who have died and been born during the census interval is thus ascertainable with more or less accuracy, and can be compared with the variation disclosed by the census. In almost every case the accretion due to the excess of births over deaths is greater than the increase shown by enumeration. The difference may be accounted for by the absence of the remainder from their country, or (*salvâ reverentiâ*) from the schedule only. I have appended a Table, No. II, in which the two rates of increase are compared, the difference between the two indicating the amount of "leakage" from the natural accretion. It will be noticed that in France alone does the natural rate fall below the census increase during the whole period in question, from which it is to be inferred that the already minute growth is dependent to an increasing extent upon immigration. Immigration is also indicated in the case of Finland in the first decade of the period, and is probably attributable to the partial depletion of the country by epidemic disease in 1868, followed by the usual rush into the vacuum. I cannot account for the similar excess of census population in Switzerland during the nineties. Throughout the whole of the thirty years the mean difference between the rates amounted to 1·3 per mille, varying from a merely nominal leakage of 0·1 in Austria to the 12·6 recorded in the exceptional case of Ireland. There is considerable difference between the decades in this respect, the rate in the eighties having apparently been thrice that of the decade before and twice that of the later period, the high rate of the middle term being common to nearly every country except Italy, where, as is well known, emigration across the Atlantic has been steadily increasing of late years. The loss on the natural output, if I may so call it, was consistently higher in Scandinavia than in the other zones until this outward movement from Italy, helped apparently by something of a similar character from Portugal, placed Southern Europe in the van. It need not be assumed that the whole of the leakage constitutes a permanent diminution of the population of the country concerned, as a considerable portion of it is known to be temporary. Thousands pass between Italy and France and South America on seasonal work, or for a few years only. It is to some extent the same with the emigration from Sweden, whilst in Norway the apparent loss is largely due to the seafaring proclivities of the coast population. I am not in a position to dogmatise as to the homing tendencies of the Scot, who comes next to the Scandinavian in his migrating habits, and emigration from Germany, which was considerable before 1893, seems to have almost ceased, or been neutralised by immigration, since that date. The weakest tendency to leakage seems to be in Austria (if Galicia be excluded) and Belgium, Spain, Finland, and—what somewhat surprises me—Switzerland. A rough calculation made from the *data* upon which this Table is based gives a total leakage on the natural increase of about 17 per cent.; in round numbers, just short of 10,000,000 in the thirty years. But I do not put forward this estimate as better than guess-work.

Taking the census rate of increase as it stands, the general mean for the whole period comes to 7·4 per mille. It stood at this in the first decade, fell to 6·6 in the eighties, and rose to 8·2 in the last period. The mean is considerably depressed by the low rates which have prevailed not only in France, but in the rest of the Southern countries, and also, of course, by the continuous decline of the population of Ireland. Holland is the only instance of continuous rise in the rate. Its neighbour, Belgium, has remained steady on a lower plane. England holds its place with Holland, at the head of the list, but only by dint of its high rate in the earlier period, since which date it has been passed by Germany and Denmark, as well as by Holland. With the exception of the slight depression of the rate towards the middle of the generation I am reviewing, there seems to be no general feature running throughout the regions in question, and the prevalence of emigration at that time was followed by a revival in the rate which prevents any assumption of a tendency to slackening; except, of course, in this country, where the revival was merely nominal. If, indeed, the enumerations made early in the nineteenth century be approximately accurate, the rate seems to be, so to speak, hardening a little in most countries—witness the following computations of Dr. Sundbärg:—

	1801-50.	1851-1900.		1801-50.	1851-1900.
Prussia	8·5	10·3	Belgium	7·6	8·5
Bavaria	4·7	6·4	Italy	5·5	6·1
Saxony	9·9	15·7	Spain	4·1	4·7
West Austria	5·9	6·9	Norway	9·3	9·5
Holland	7·3	10·3	Denmark	8·6	10·5

I now pass from the net results of the movement of population, affected as they are by the relations of a country with the world outside, to the more interesting subject of internal growth—the "breed of men," referred to in the quotation at the head of this address. The whole range of vital statistics is involved in this question, since not only births and deaths, but sex, age and marriage, have to be taken into account, each supplying some link of causation which cannot well be omitted. The death-rate depends largely upon the age-distribution, which is itself a product of the birth-rate. The connection between the marriage-rate and births is still close, though not, perhaps, what it used to be; whilst the relative numbers and age-distribution of the sexes affect the community from the cradle to the grave. It is not the bare rate of natural increase which is of interest in connection with my subject, but the relative influence of the elements of which it is composed. I shall not, therefore, dwell upon the local differences set forth in the Table more than to draw attention to the height of the rate in the north over that in the south. The latter, however, is increasing, while that in Scandinavia is to a slight extent on the wane. I may point out also that the depression noticeable in the census-rate during the eighties is not found in the natural rate of increase, though there are some signs of it in Germany and Austria.

Now, in examining the composition of the natural rate, the proportions of the sexes is the first factor to be considered. It is not the time to enter into the 266 or more hypotheses as to the origin of sex-distinctions which have been duly chronicled by generations of the inquisitive, particularly as most of the modern theories I have read involve a technical proficiency in biology, pathology, histology and the like, which I do not possess. The initial fact pertinent to my subject, is that, whatever the cause, only 948 girls were born to 1,000 boys in the early seventies, and neither more nor less thirty years later. Again, by the end of the first year of life, the proportion rose at both periods to about 980; equality is attained in early adolescence, and a working majority of eligible girls is found at the ages when they are most sought for in marriage. Finally, as fewer women are born, so fewer die, for the death-rates gave respectively 933 and 946 female deaths to 1,000 of the other sex. All this is the outcome of what Dr. Farr used to call the "secret adjustments" of human life, tending towards equilibrium at the stages when balance is most likely to be useful. The greatly superior vitality of the fair sex after middle life does not, perhaps, come so apparently into this category of dispensations.

Equitable as the distribution may be in design, it does not follow that it is carried out to its full advantage under our imperfect civilisation. The figures given in Table III of the Appendix show that in the whole population dealt with there were, in the 'seventies, 1,030 women to 1,000 men, and that thirty years brought about an addition of 8 more. Quoting the absolute numbers, out of the 239,000,000 in the later period there were 432,500 fewer girls under 15 than boys, but above that age the excess of women amounted to 4,873,000, half of whom were in the prime of life. It does not appear to me that the details indicate any distinct tendency to vary in one direction more than in another. In infancy, the improvement in hygiene tends to diminish the proportion of girls, since it is the other sex which, being more apt to succumb, profits by it most. Between 20 and 50 the proportion is raised considerably in some countries by the greater migration of men. In nearly all it rises after 50, but in Scandinavia men seem to return home in greater numbers than of yore after 60.

I am dealing, however, at present, not with the extremes of life, but with the reproductive period, which, in the case of women, I have taken at 15 to 45. I have compared their number at this period with that of men of 20 to 50, in view of the earlier development of women, and the earlier close of their prime, though by adopting the later period I am aware that a greater redundancy of women is shown. There is but little change in the proportions between the earlier and the later period. In the former it was 1,150, in the latter 1,154 per 1,000 males. Increased migration since the 'seventies probably accounts for most of this difference, as in localities where this movement is insignificant there seems a tendency for the ratio to decline. The proportion borne by the women of productive ages to the total population is fairly steady, not only from census to census, but geographically also. It was 228·8 per mille at the first, and 228·4 at the last period quoted. In Scandinavia, where it is lowest, it has been thrown back by the rising proportion of the aged. It reaches its acme in the United Kingdom, where it is forced up by the decreasing supply of young blood. In France there was not much room left for decline in this last respect, but what there was has not been neglected. Elsewhere the proportion seems to have declined, though very slightly.

I come next to the nuptiality, or tendency to marry. A generation ago the marriage-rate was held to be a good barometer of prosperity, but new factors have entered into the case, and, as has been shown before this Society, by Mr. Yule amongst others, the criterion is no longer trustworthy. The main thesis is still, no doubt, generally true, that wherever there is room for two to live together up to the conventional standard of comfort, a marriage takes place. The standard and the power of convention over it have risen, and this change has not been without its material consequences, though it is not in the marriage-rate that they are apparent. The crude marriage-rate, or the number of persons annually married per mille of total population, has its chronological uses, in that it serves to illustrate changes occurring from time to time in the same community, providing that there has been no material change in the age-distribution in the interval. I have included them in Table IV for that purpose, and they should not be taken as denoting differences in degree of nuptiality between the respective countries. They indicate, on the whole, a slight falling-off in the general rate during the last thirty years, more pronounced amongst the already low rates of Scandinavia than elsewhere, and in France and Italy than in the Central countries.

A better exposition of the marriage tendencies of the population is to be got by taking the census figures for females, and excluding from the basis of the rate girls under 15 years old. As the present object is to correlate the marriage-rate with that of birth, I have also left out of account women past the reproductive age. In Table IV, then, will be found the number per mille of women between 15 and 45 who are returned as married. On the whole population dealt with, this proportion, which was 490 in the first period, rose to 500 in the last. Throughout the whole thirty years, however, it stood above the latter figure in France, Italy, and (conjecturally) in Spain. It was also apparently reached in Finland, after the great epidemic of 1868, but I must state that the ratio for this period was only obtained by interpolation, and the same remark applies to that for Spain. England very nearly reached the half in the 'seventies, and Germany topped it in the 'nineties. It is in the South, however, that a woman seems to have the best chance of a husband, though from Denmark southwards Central Europe is apparently on the up-grade in this line. Of all the progressive countries Finland presents the greatest falling-off, amounting to more than 6 per cent., as compared with 4 per cent. in Norway and 2 per cent. in Sweden. In Ireland, where the rate, even in the first period, was only 401, there was a decline of nearly 19 per cent., and in the last decade less than a third of the women of the age in question were married.

I have added to the table two columns showing the proportion of bachelors amongst men of 20 to 50, as a supplement, for what it is worth, to the above figures for the other sex. The increased avoidance of matrimony is most marked throughout the United Kingdom and North Scandinavia, and this, in the northern aggregate, almost neutralises the growing connubiality of Germany and most of its neighbours, and even of the already much-married Italy.

Having now exhibited the sources of the birth-rate, or, at least, of the bulk of it, I pass on to the outcome thereof. The crude birth-rate, or the proportion of births to the total population, is useful, like the corresponding marriage-rate, for comparing the circumstances of a community at different times, but owing to differences in age and sex-distribution, it is not a good guide in comparing countries with each other. I have found, however, from the numerous returns I have been examining of late, a greater correspondence, on general lines, between the crude rate and that corrected for age and sex, than I expected; but I do not propose to make use of the former for more than chronological comparison. From Table V it will be seen that the general mean for the whole period was 32·5 per mille. Starting at 33·5, it declined to 31·3 in the nineties, or by 6·6 per cent. The fall was general. In France and Ireland it reached 12 and 13 per cent. respectively. Elsewhere, England heads the list with over 15 per cent., and Scotland, Sweden, Holland, and Belgium all show decline of more than 10. The case of Finland is exceptional, as already explained. On the whole, the rate fell least in the Southern zone, where the decrease only amounted to 5·7. In Scandinavia it reached 8, and in the Central zone 9·7 per cent. By restricting the basis of comparison to women of child-bearing age, the rate is somewhat altered, though the general trend is the same. Where the proportion of those women to the total population has fallen, the decline in the birth-rate is generally less marked than is indicated by the crude figures, and *vice-versâ*. In Sweden, for instance, where the proportion of marriageable women fell from 223 to 215 per mille, the corrected birth-rate fell by only 5 per cent., against 11 on the crude rate. On the other hand, in England, where the proportion rose considerably, the fall, from 15·5, is raised to over 25 per cent. In the aggregate of countries, this correction indicates a fall of 5 per cent. in the North, 6 in the South, and 11 in the Central zone, as compared with that in the crude rates mentioned above.

The entire supply of living births has now been compared with the total number of the women presumably most likely to have produced them. I have now to co-ordinate the birth figures with those of marriage, and for this purpose, the number of non-married women and of children born out of wedlock must be eliminated from the account. The proportion of these last is given at the end of Table V, and will be seen to vary considerably from country to country. The rate is taken upon the usual two bases; first, on the total number of living births, and, again, upon that of the non-married women of productive age. Personally, I prefer the latter. The high rates in Austria, Germany, Sweden, Denmark, and, apparently, Portugal, will be noted, as will the low ones in Ireland, Holland, this country, and Italy. It must be borne in mind, however, that the stigma of illegitimacy is by no means uniformly applied, and in Austria, South Germany and Italy many births so registered on ecclesiastical considerations would be accounted legitimate elsewhere. The rate is generally on the decline, but as to whether this is a result of improved sexual morality, I have my doubts. I am not concerned, however, with the moral but with the statistical, aspect of the figures, and all I have in hand just now is to get them out of my calculation. The numerical relation between the remainder, that is, the legitimate living births, and the married women between 15 and 45, is set forth in the table under consideration, and constitutes what is now generally called the "fecundity" rate. The main feature about this is that it has not only declined, like the birth-rate, though much more rapidly, but that its movement has been in all cases except two or three in opposition to that of the marriage-rate amongst women of the ages in question. The following short table will illustrate the tendency, and also throw light upon the relation between the crude birth-rate and the supply of marriageable women, on which I commented above:—

Country.	Variation per cent. in				
	Women of 15—45, per mille of total.	Married per mille of women, 15—45.	Rates per mille.		
			Crude birth.	Corrected birth.	Fecundity of married.
Norway	– 0·2	– 4·3	– 2·3	– 5·0	– 0·3
Holland	– 1·9	+ 1·8	– 11·4	– 5·7	– 7·0
Belgium	+ 5·0	+ 15·0	– 10·2	– 14·8	– 25·4
Germany	– 0·4	+ 7·1	– 7·7	– 4·8	– 10·7
Austria	– 3·8	+ 7·7	– 6·5	– 4·4	– 8·1
England	+ 8·0	– 5·4	– 15·5	– 25·3	– 19·5
Scotland	+ 4·0	+ 3·7	– 12·3	– 18·1	– 12·0
Italy	– 5·7	+ 3·9	– 5·4	– 3·7	– 5·9
France	+ 0·8	+ 4·0	– 12·6	– 14·3	– 18·4
Ireland	+ 7·0	– 18·8	– 13·2	– 23·0	– 5·9

Of the above figures, the most striking, on the surface, are those of Belgium, in which country the outburst of connubiality which began about 1895 has been accompanied by a remarkable falling-off in the number of births per 1,000 wives. Taking this with the curious difference in the sex-proportions between the census results of 1866 and those of 1900, one is inclined to suspect the accuracy of the earlier figures, though I am not prepared to do this without more scrutiny than I have had time to give. Then, again, there is the contrast between the two countries of low birth-rate, France and Ireland, which is brought out by these comparisons. The proportion of marriageable women has risen in both, though more extensively in Ireland, where emigration is added to a low supply of the young. But in France the proportion of these women who are married is the highest on the list, and in Ireland the lowest. Then, what happens? In France there were on an average, 177, and in Ireland, 293 births annually per 1,000 wives, during the thirty years. In the early years, Ireland stood fifth of the 16 countries in fecundity, and fourth in the nineties, whilst France, as has been already indicated, has throughout remained far below the rest, with a deficiency in the last decade of 36 per cent. on the general mean rate. Ireland made the best of its paucity of married women, and stood 16 per cent. above that standard. The decreasing fecundity in Great Britain has been the subject of comment for years past, and I need only point out that the rate of decline has been relatively greater even than that in France, and being of later development, the dislocation of the age-distribution is more sudden, and the increased proportion of the marriageable women more pronounced. The table shows moreover that relatively fewer of them find husbands than thirty years ago, and, on the whole, are less burdened with parturition to the extent of 25 per cent. There is this to be said in regard to the British figures, that the mean age of wives, which, thirty years ago was unusually low here, has risen considerably of late, and the curtailment thus caused of the child-bearing period accounts for part of the decline in fecundity. It is but a relatively small portion, however, which the Registrar-General attributes to this postponement of marriage, and the explanation does not apply to the rest of the countries named, since such evidence as is available regarding them proves that the mean age of the married is almost everywhere descending towards that which prevailed in this country a generation ago. The physiological theories which were put forward about that time, by Herbert Spencer and others, have not been endorsed by the scientific experience of the present day, and there are not, I believe, many observers who hold that increasing sterility is a necessary physical consequence of the increasing nerve-strain of modern life. The process of adjustment to new conditions, which is now attracting the attention of every student of vital statistics, has been in operation for the last quarter century at least, and apparently *vires acquirit eundo;* but it is generally considered to be an optional or voluntary social expedient rather than an intrinsic modification of physical capacity. The deliberate limitation of the number of children born into the world is not, as we all know, by any means a new idea; but the titular connection of the modern development of the "prudential check" with the name of Malthus is enough to make that much-misrepresented economist turn in his grave: but that—in the now conventional phrase—is another story! Amongst the classes whose resources allow greater elasticity in the standard of comfort than is possible to those lower in the scale, who, as a rule, determine the rate, the check in question has no doubt been prevalent, on different lines and in different degrees, for a long time past in Western Europe, generally taking the form to which Malthus referred, the abstention from marriage or its postponement till later in life than inclination and instinct dictate. But until the present generation, it was in France alone that the systematic adoption of the limitation of offspring without abstention from marriage permeated the whole of society. The results in that country of the long continuance of this practice are too well known to need comment on this occasion, and I will only point out that the English age-returns show only too plainly that we have here, in the green, the state of things we can appreciate in the dry across the Channel, viz., an increasing preponderance of the population in or past its prime over that which is to succeed it.

I now turn from the forces which tend towards the growth of population to that which retards it. The conditions of the death-rate materially differ, of course, from those underlying the rates of marriage and birth. These last affect only the population between certain ages, whereas to the Urn of Death, again to quote Dr. Farr, all ages must in their degree contribute. Marriage and the production of children, moreover, are acts entirely under the control of the individual, whilst mortality, though to a considerable extent amenable to human regulation, is so in a far less degree than the other factors, and, practically, only through collective, not individual effort. It has been somewhat affected, no doubt, by the changes indicated above in regard to marriage and fecundity, but, in the main, it is to improvement in general hygienic conditions that we must look for any substantial decrease in the death-rate. I regret that space and time do not allow me to enter more than cursorily into the question of the variations of late years in the mortality of the different countries herein reviewed, but I hope to be able to add an appendix before this Address is published in our Journal, in which I set forth the age-distribution, and attempt to carry out a suggestion made long ago by Dr. Ogle, with regard to the international comparison of this rate. For the purpose of correlation with the birth-rate in producing the rate of natural increase, I make use of the crude rates only. I am fully aware that there is more difference between these and the rates corrected for age and sex than in the case of marriage and birth-rates similarly corrected, but if I find that any of the observations I am now about to make are invalidated by my subsequent investigations, I shall only be in the position in which every impartial inquirer is bound to find himself at some time or other, and in which I have myself been put more than once in my statistical career.

The figures I bring forward in elucidation of the movement of the death-rate are given in Table VI of the Appendix. The rate which prevailed in the eighties represents almost exactly the mean for the whole period, taking all the countries together. It was 6·3 per cent. below the rate of the previous decade, and 8 above that of the succeeding period. In the Southern and Central zones the decline was more marked in the later than in the earlier period, whilst in Scandinavia the improvement seems to be about the same in each. Germany and Italy, in particular, show a remarkably rapid lowering of their mortality of late years, but England, Scotland, and France showed a slackening tendency up to the beginning of the new century, though they have since picked up leeway, I think. The most striking decline in this rate is found in the case of Holland, where the mortality fell off by over 24 per cent. between 1871 and 1900. The improvement in Italy, Germany, and Switzerland, too, amounted to more than 18 per cent. Ireland stood almost stationary at a rate but little above the low one prevailing throughout the northern countries. In the latter the falling-off was steady, though the already low level does not admit of a decrease as great as that of the southern countries.

I defer comment upon the differences between countries in regard to death-rate until I can establish something in the way of a general standard whereby to adjust divergence of age and sex-distribution. Judging from the returns I have at hand, there has been a universal improvement in the case of infantile mortality, most marked in countries like Bavaria, Saxony, Prussia, Italy, and Holland, where the rate thirty years ago was remarkably high. The decline in the rate is even gseater amongst children between the age of 1 and 4, and in several countries the improvement is more marked still between 5 and 14. During the period of decline, beginning at 60, the improvement is by no means so great or so general. In six or seven of the countries, indeed, the rate has risen slightly, a feature which I note is reflected in some of the recent Life-Tables. But it is the infantile mortality, of course, which requires the closest scrutiny, and, unfortunately, it is the subject upon which the data appear to be the least uniform.

I pass, then, to the question of the relative influence of the birth and the death-rate upon that of natural increase and its variation. The rates I have quoted in the appendix form a good illustration of another of the "secret adjustments" mentioned above, viz., the companionship of a high birth-rate with a correspondingly high mortality. This can be seen in the case of Austria, Spain, Italy, and Germany, and the converse in Sweden, Norway, and most of the other Scandinavian tracts, in all of which, except Finland, the low birth-rate is accompanied by a comparatively low rate of deaths. The general result is to place all these countries except Sweden very high in the serial order of natural increase. Germany, which, from seventh in the 'seventies, stands third in the 'nineties, won its position by persistence in outbreeding its high mortality. The same was the case in Holland at the earlier period, though later, owing to the decline in the death-rate, it stands first in the relative excess of its births. England has changed places with Germany, because the decrease in its mortality has been outweighed by its still more decreasing birth-rate. Sweden and Ireland are other instances of the neutralisation of the increase which would naturally follow a low mortality by a still lower birth-rate, and France, whose natality would in any case keep it at the bottom, is burdened, in addition, by a death-rate which is only excelled by four others. It is interesting to look at these positions in the light of the fecundity-rate, but I can go no further than to point out that Holland stands first in both natural increase and fecundity; Norway, Finland, Scotland, Italy and Germany occupy pretty well the same rank in regard to both rates, whilst England and Sweden are only buoyed up by their low mortality.

The last point to which I wish to refer here is the extent to which the birth- and death-rates can be used as a measure of the general well-being of a country. Taken alone, neither of them, any more than the rate of natural increase, is an adequate and trustworthy indication. There is much to be said, and has been said, in favour of using the death-rate; but, after all, it represents only the maintaining, or conservative power of the community, and not the creating, or progressive side of vitality. The birth-rate, on the other hand, occupies the equally *ex parte* standpoint of representing instinctive reproduction, irrespective of the preservation of those it calls into existence. The ideal, it seems to me, should be the maximum result with the minimum expenditure of life or suffering. Towards this both the rates contribute, and I have hitherto, in dealing with this question, adopted the suggestion of Dr. Rubin, communicated to our *Journal* in 1897, that the fairest measure of the relative well-being of a country, so far, of course, as the actual vitality of the population is involved, is the square of the death-rate divided by the birth-rate. I need not reproduce the exposition of this method, which is fully given in the paper cited. When applied to different countries, the lowest quotient implies the highest degree of well-being. In dealing with the countries included in my review, however, I have taken 1,000 as denoting "humanly probable "perfection" by this criterion, and credited the countries with the complement of their quotient, so that the highest in *status* gets the most marks, instead of the reverse :—

Country.	Figure for		Serial order.	
	1871-1900.	1891-1900.	1871-1900.	1891-1900.
Norway	908	908	1	1
Sweden	898	901	2	2
Denmark	893	899	3	3
England	882	889	4	5
Scotland	880	886	5	6
Finland	873	873	6	7
Holland	869	896	7	4
Ireland	864	856	8	11
Belgium	858	873	9	8
Portugal	848	852	10	12
Switzerland	846	872	11	9
Germany	835	864	12	10
Italy	799	832	13	13
France	789	792	14	15
Austria	785	812	15	14
Spain	736	750	16	16

The order seems in general harmony with the tenor of the statistics I have been reviewing, though the position of Ireland and Portugal may appear somewhat anomalous. But we are here dealing with vital statistics only, and not with economic and other considerations, which would probably entail, if introduced, considerable modification. I would just remark, in passing, that the remarkably high rates of birth, death, and marriage in Eastern Europe place those countries below nearly all those in the West. At the other side of the world, the low death-rate and high birth-rate of the Argentine give that country the figure of 932, above Norway. Going further afield, this is beaten by the Australian Commonwealth, which, mainly through its low death-rate, obtains 941. The climax is reached in New

Zealand, where a death-rate of 10 indicates the nearest approach to immortality yet on record, and imparts to a comparatively low birthrate the borrowed lustre of 963 points!

To sum up:—The thirty years included in my survey have been generally characterised by a moderate rate of growth of population, interrupted until towards the end of that period by considerable emigration, since reduced, except in one or two cases. People marry a little more than they did a generation ago, and, in most of the countries reviewed, they marry earlier; but the growth of the relative number of the married has been accompanied by a material decline in their output of children. Illegitimate unions, also, whether less frequent than before or not, at least contribute less to the tale of births. The community is therefore almost everywhere becoming an older one, with a gradually decreasing basis for the coming generation. Thanks to a general improvement in hygienic conditions, fewer succumb to disease, especially in early life, and the mortality having decreased more rapidly than the fertility of the population, the excess of births over deaths is relatively not below, but, on the whole, indeed, a little above that which prevailed at the beginning of the period.

I put forward no claim to originality in the above conclusions, or to the discovery of any "ungotten" minerals in the well-trodden regions in which I have been working; and I take this opportunity of gratefully acknowledging my indebtedness to the compilations of M. Lucien March and Dr. Sundbärg, as to the members of our staff, who have kindly provided me with extracts not to be found in my library. In the use I have made of these materials I trust I may be held to have succeeded, at all events in part, in my attempt to place before the Society the aspect of social growth which is suggested by vital statistics from the standpoint of international comparison, a task which I do not think has been undertaken here for a good many years. With much of the material I have dealt but superficially, and I can therefore only express my hope that some of my colleagues, experts in the subject, will not forget our original, though long abandoned motto, "*Aliis exterendum.*"

APPENDIX.

Table I.

	1870.		1900.		Increase per cent.	
	Population, 000·0.	Per cent. of total.	Population, 000·0.	Per cent. of total.	Total.	Annual rate.
Sweden	4,168·5	2·172	5,136·4	2·148	23·2	0·70
Norway	1,739·8	0·906	2,243·0	0·938	28·9	0·85
Finland	1,768·8	0·922	2,712·6	1·134	53·3	1·43
Denmark	1,799·4	0·937	2,449·5	1·024	36·1	1·03
Holland	3,616·2	1·884	5,179·1	2·166	43·2	1·20
Belgium	5,020·8	2·616	6,693·8	2·799	33·3	0·96
Germany	40,818·0	21·268	56,367·2	23·571	38·1	1·08
West Austria	14,556·6	7·585	18,104·6	7·571	24·4	0·77
Switzerland	2,669·7	1·391	3,315·4	1·386	24·2	0·72
England and Wales	22,712·3	11·834	32,527·8	13·602	43·2	1·20
Scotland	3,360·0	1·751	4,472·1	1·870	33·1	0·96
Italy	26,650·0	13·886	32,475·3	13·580	21·9	0·66
Spain	16,500·0	8·597	18,618·1	7·785	12·8	0·40
Portugal	4,365·0	2·275	5,423·1	2·268	24·2	0·72
France	36,764·6	19·156	38,961·9	16·293	5·98	0·19
Ireland	5,412·4	2·820	4,458·8	1·865	*−17·6*	—
Total	191,922·1	100·000	239,138·7	100·000	24·6	0·74
Groups.						
Scandinavia	9,476·5	4·937	12,541·5	5·244	32·3	0·94
W. Central	92,753·6	48·329	126,660·0	52·965	36·5	1·04
Southern	47,515·0	24·758	56,516·5	23·633	18·9	0·58
Total	*149,745·1*	*78·024*	*195,718·0*	*81·842*	*30·7*	*0·90*
France and Ireland	42,187·0	21·976	43,420·7	18·158	2·9	0·09
Teutonic	102,230·1	53·266	139,201·5	58·209	36·2	1·03
Latin	84,279·6	43·914	95,478·4	39·926	13·2	0·42
Ireland (*as above*)						

TABLE II.—*Annual rates of increase per 1,000:—Natural and enumerated.*

Country.	1870-1900.			1870-80.			1880-90.			1890-1900.		
	Natural.	Census.	Leakage.	Natural.	Census.	Leakage.	Natural.	Census.	Leakage.	Natural.	Census.	Leakage.
Sweden	11·7	7·0	4·7	12·2	9·1	3·1	12·2	4·7	7·5	10·7	7·1	3·6
Norway	13·9	8·5	5·4	14·0	10·1	3·9	13·9	4·1	9·8	14·0	11·3	2·7
Finland	13·9	13·2	0·7	14·8	15·4	+ 0·6	13·9	13·2	0·7	12·5	11·1	1·4
Denmark	12·9	10·3	2·6	12·0	9·6	2·4	13·9	9·4	4·5	12·7	11·4	1·3
Holland	13·1	12·0	1·1	11·9	11·7	0·2	13·2	11·8	1·4	14·1	12·7	1·4
Belgium	9·8	9·6	0·2	9·7	9·5	0·2	9·7	9·5	0·2	9·8	9·8	—
Germany	12·5	10·8	1·7	11·9	10·3	1·6	11·7	8·9	2·8	13·9	13·2	0·7
West Austria	7·8	7·7	0·1	7·4	7·3	0·1	7·2	6·4	0·8	8·8	8·4	0·4
Switzerland	7·9	7·2	0·7	7·3	6·5	0·8	7·3	3·8	3·5	9·1	11·4	+ 2·3
England	13·0	12·0	1·0	14·0	13·4	0·6	13·4	11·1	2·3	11·7	11·5	0·2
Scotland	12·8	9·6	3·2	13·3	10·5	2·8	13·1	7·5	5·6	11·9	11·1	0·8
Italy	9·4	6·6	2·8	7·0	6·0	1·0	10·7	*7·6*	3·1	10·7	*6·2*	*4·5*
Spain	4·9	4·0	0·9	5·0	3·5	1·5	4·5	3·5	1·0	5·3	4·9	0·4
Portugal	9·9	7·3	2·6	—	7·4	—	10·6	7·2	3·4	9·3	7·2	2·1
France	1·4	1·9	+ 0·5	1·7	2·0	+ 0·3	1·8	2·2	+ 0·4	0·7	1·6	+ 0·9
Ireland	6·1	*(−6·5)*	*(12·6)*	8·1	*(−4·5)*	*(12·6)*	5·4	*(−9·5)*	*(14·9)*	4·8	*(−5·3)*	*(10·1)*
Total	**8·7**	**7·4**	**1·3**	**8·0**	**7·3**	**0·7**	**8·8**	**6·6**	**2·2**	**9·3**	**8·2**	**0·8**
GROUPS.												
Scandinavia	12·6	9·4	3·2	12·9	10·6	2·3	13·0	7·3	5·7	12·1	10·2	1·9
W. Central	11·5	10·4	1·1	11·5	10·5	1·0	11·1	9·1	2·0	11·8	11·7	0·1
Southern	7·4	5·8	1·6	6·3	5·3	1·0	7·1	5·3	1·8	8·9	5·9	3·0
Total	*10·4*	*9·0*	*1·4*	*10·1*	*8·9*	*1·2*	*10·3*	*8·1*	*2·2*	*10·8*	*9·9*	*0·9*
France and Ireland	1·95	0·97	0·98	2·6	1·2	1·4	2·2	0·8	1·4	1·1	0·9	0·2
Teutonic	*11·6*	*10·3*	*1·3*	*11·7*	*10·5*	*1·2*	*11·4*	*8·9*	*2·5*	*11·8*	*11·6*	*0·2*
Latin	*5·1*	*4·2*	*0·9*	*4·5*	*3·9*	*0·6*	*5·5*	*4·5*	*1·0*	*5·3*	*3·9*	*1·4*
Ireland (as above)												

TABLE III.—SEX. *Number of females per 1,000 males.*

Country.	Total.		At birth.		Under 5.		5 to 15.		15 to 45.		45 to 60.		60 to 70.		70 and over.		At death.	
	1870.	1900.	1870.	1900.	1870.	1900	1870.	1900.	1870.	1900.	1870.	1900.	1870.	1900.	1870.	1900.	1870.	1900.
Sweden	1,067	1,019	952	947	976	966	992	972	1,066	1,037	1,129	1,143	1,264	1,191	1,494	1,291	963	994
Norway	1,036	1,084	951	942	969	968	965	959	1,046	1,147	1,086	1,166	1,170	1,150	1,313	1,217	962	975
Finland	1,056	1,021	963	917	893	979	997	987	1,045	996	1,134	1,078	1,272	1,179	1,477	1,372	979	953
Denmark	1,026	1,053	955	953	980	987	980	981	1,029	1,070	1,031	1,086	1,137	1,144	1,299	1,265	974	954
Holland	1,029	1,025	954	919	990	982	982	988	1,029	1,029	1,046	1,037	1,149	1,101	1,269	1,217	957	938
Belgium	995	1,013	952	955	994	988	990	994	978	995	996	1,043	1,005	1,094	1,272	1,214	930	913
Germany..........	1,040	1,032	950	948	995	993	996	996	1,058	1,012	1,064	1,108	1,104	1,188	1,131	1,274	923	922
West Austria....	1,043	1,010	943	948	1,008	998	1,005	995	1,060	1,028	1,049	1,175	1,049	1,175	1,015	1,239	*936*	*955*
Switzerland	1,016	1,038	948	960	1,005	997	1,004	998	1,070	1,017	1,065	1,113	1,071	1,182	996	1,186	918	956
England	1,054	1,068	963	964	999	1,003	995	1,003	1,079	1,081	1,075	1,088	1,128	1,194	1,222	1,345	934	936
Scotland	1,096	1,057	945	955	974	986	969	973	1,138	1,057	1,203	1,114	1,297	1,295	1,454	1,536	1,002	997
Italy	989	1,010	937	947	971	960	965	971	1,015	1,037	971	1,028	971	1,036	964	1,014	948	972
Spain	1,044	1,049	936	905	974	981	969	983	1,109	1,080	1,014	1,084	1,029	1,092	1,100	1,128	927	964
Portugal	1,089	1,092	—	938	963	967	955	968	1,158	1,128	1,169	1,196	1,246	1,246	1,203	1,340	—	967
France	1,008	1,032	953	961	975	1,001	968	998	1,016	1,014	1,005	1,050	1,033	1,105	1,134	1,227	913	930
Ireland	1,050	1,027	951	944	974	969	966	968	1,106	1,042	1,096	1,114	1,069	1,027	1,085	1,039	991	1,016
Total	1,030	1,038	948	948	986	989	982	990	1,052	1,038	1,040	1,078	1,064	1,133	1,128	1,213	933	946

TABLE IV.—*The married and marriageable.*

Country.	Annual average of persons married per mille of population.			Women 15 to 45 per mille of population.			Number married per mille of women 15 to 45.			Women of 15 to 45 per mille of men 20 to 50.		Bachelors per 1,000 men 20 to 50.		Spinsters and widows per 1,000 women 15 to 45.	
	1870.	1890.	1900.	1870.	1890.	1900.	18.0.	1890.	1900.	1870.	1900.	1870.	1900.	1870.	1900.
Sweden	13·6	12·5	11·9	223·4	213·4	214·7	420·2	420·2	411·5	1,160	1,180	419·7	457·7	579·8	588·5
Norway	14·5	13·1	13·4	220·7	220·0	220 2	436·5	421·0	417·8	1,170	1,327	405 6	432·7	563·5	582 2
Finland	16·6	14·6	14·0	238·3	217·4	219·4	*501·7*	488·3	470·7	1,163	1,120	*365·8*	414·6	*498·3*	529·3
Denmark............	15·7	14·7	14·4	221·3	217·9	223·8	450·0	463·8	463·0	1,128	1,216	417·5	380·1	550 0	537·0
Holland	16·2	14·1	14·7	224·8	213·7	220·4	439 6	445·5	446·2	1,126	1,162	428·7	419 9	560·4	553·8
Belgium	14·4	14·0	15·9	218·7	219·2	229·6	408·8	429·8	471·1	1,064	1,117	497·5	415·7	591·2	528·9
Germany	17·2	15·6	16·4	227·5	221·1	226·5	471·0	488·6	504·3	1,164	1,139	420·4	383·7	529 0	495·7
West Austria ...	16·2	15·1	15·6	235·3	227·3	226·6	*448·4*	461·0	472·8	1,157	1,142	*394·4*	411·8	551·6	527·2
Switzerland	15·4	14·0	15·1	232·4	225·5	233·9	419·3	426·6	441·7	1,145	1,143	477·6	445·1	580·7	558 3
England	16·2	14·9	15·6	230·7	237·6	249 1	496·3	470·7	469·4	1,224	1,218	339·1	375·1	503·7	530 6
Scotland	14·4	13·4	14·4	232·6	232 8	242 0	435 0	413·2	419·9	1,333	1,210	409·5	449·8	565·0	580·1
Italy	15·3	15·9	14·5	227·7	*227·9*	214·6	519·9	*538·5*	539·0	1,102	1,159	405·9	383 2	480·1	461·0
Spain	14·7	12·9	15·7	236·1	233 9	226·4	*562·2*	561·1	557·4	1,211	1,171	*336·8*	339·3	437·8	442·6
Portugal	—	13·9	13·3	241·0	228·6	229 6	420·5	439·9	452·0	1,209	1,282	420·1	394·1	579 5	548·0
France..............	16·0	14·7	15·0	226·1	226·3	227·9	531·3	508·8	552·4	1,074	1,079	366·2	365·1	469·7	447·6
Ireland	9·4	8·6	9 6	220 0	226·9	235·4	400·6	335·9	325·1	1,307	1,217	517·4	621·3	599·4	674 9
Total	**15·4**	**14·7**	**15·2**	**228·8**	**226·6**	**228·4**	**490·4**	**488·8**	**500·1**	**1,150**	**1,154**	**393·2**	**388·7**	**509·6**	**499·9**
Scandinavia	14·8	13·5	13 1	225·0	216·0	218·0	444·0	443·0	436·0	1,156	1,197	406·0	428·0	556·0	564·0
W. Central	16·5	15·1	15·9	229·0	228·0	233·0	466·0	471·0	482·0	1,175	1,163	403·0	393·0	534·0	518·0
Southern...........	14·9	14·6	14·8	232·0	227·0	220·0	526·0	537·0	536·0	1,148	1,174	382·0	369·0	474·0	463·0

TABLE V.—*Births (Living).*

Country.	Annual births per mille of population.			Births per mille of women 15 to 45.			Legitimate births per mille married women 15 to 45.			Illegitimate births					
										Per mille spinsters and widows 15 to 45.			Per mille of total births.		
	1870—	1880—	1890—	1870—	1880—	1890—	1870—	1880—	1890—	1870—	1880—	1890—	1870—	1880—	1890—
Sweden	30·5	29·1	27·1	131	131	124	278	279	268	23	23	24	104	103	119
Norway	31·0	30·9	30·3	143	138	136	302	304	301	21	17	17	81	73	74
Finland	37·0	35·0	32·2	155	153	147	*285*	321	292	*25*	19	18	80	65	66
Denmark	31·4	32·0	30·2	136	142	133	268	277	259	28	25	24	112	94	98
Holland	36·2	34·2	32·5	157	156	146	345	339	321	10	9	6	35	31	23
Belgium	32·3	30·2	29·0	149	134	127	338	285	252	18	21	16	71	88	68
Germany	39·1	36·8	36·1	165	162	157	319	301	285	27	29	26	87	91	84
West Austria	36·7	35·3	34·3	157	153	150	295	282	271	44	43	41	155	151	145
Switzerland	30·8	28·1	28·1	127	123	123	288	273	266	11	10	10	49	46	45
England	35·4	32·5	29·9	154	130	115	292	263	235	17	11	9	55	44	40
Scotland	34·9	32·3	30·6	119	132	122	311	296	271	25	17	14	95	77	66
Italy	36·9	37·8	34·9	160	*164*	154	286	*278*	269	23	*25*	20	70	77	66
Spain	*35·6*	36·2	34·8	*156*	158	151	*262*	267	259	*20*	18	16	*55*	50	46
Portugal	—	*33·6*	30·6	—	145	133	—	289	259	—	32	29	—	123	121
France	25·4	23·9	22·2	112	99	96	195	178	159	17	17	19	72	85	88
Ireland	26·5	23·4	23·0	126	99	97	306	286	288	6	5	4	28	32	31
Total	**33·5**	**32·7**	**31·3**	**147**	**141**	**135**	**276**	**265**	**249**	**23**	**22**	**20**	**79**	**80**	**75**
Scandinavia	31·9	31·1	29·4	138	139	131	283	286	278	24	22	22	96	87	92
W. Central	36·9	34·6	32·9	158	148	140	309	288	268	26	24	21	87	86	79
Southern	36·5	35·9	34·5	159	*159*	149	277	278	264	22	24	20	65	68	60

TABLE VI.—*Crude death-rates compared with birth-rates.*

Country.	Deaths annually per 1,000 of total population.				Mean annual birth-rate per 1,000.	Decline per cent. in rates between 1871 and 1900.	
	A. 1871-80.	B. 1881-90.	C. 1891-1900.	D. 1871-1900.	D. 1871-1900.	Deaths.	Births.
Sweden	18·3	16·9	16·4	17·2	28·9	10·4	11·2
Norway	17·0	17·0	16·3	16·8	30·7	4·1	2·3
Finland	22·2	21·1	19·7	21·0	34·7	11·2	13·0
Denmark	19·4	18·6	17·5	18·3	31·2	10·8	3·9
Holland	24·3	21·0	18·4	21·2	34·3	24·3	11·4
Belgium	22·6	20·5	19·2	20·8	30·5	15·0	10·2
Germany	27·2	25·1	22·2	24·8	37·3	18·3	7·7
West Austria	29·3	28·1	25·4	27·6	35·4	13·3	6·5
Switzerland	23·5	20·8	19·0	21·1	29·0	19·1	8·7
England	21·4	19·1	18·2	19·6	32·6	14·9	15·5
Scotland	21·6	19·2	18·7	19·8	32·6	13·4	12·3
Italy	29·9	27·1	24·2	27·1	36·5	19·0	5·4
Spain	*30·6*	31·7	29·5	30·6	35·5	3·6	2·2
Portugal	—	23·0	21·3	*22·1*	*32·1*	—	—
France	23·7	22·1	21·5	22·4	23·8	9·3	12·6
Ireland	18·4	18·0	18·2	18·2	24·3	1·1	13·2
Total	**25·5**	**23·9**	**22·0**	**23·8**	**32·5**	**13·7**	**6·6**
GROUPS.							
Scandinavia	19·0	18·1	17·3	18·1	30·7	8·9	7·9
W. Central	25·4	23·5	21·1	23·3	34·8	16·9	10·8
Southern	30·2	28·8	25·6	28·2	35·6	15·2	5·5
Total	*26·5*	*23·9*	*22·1*	*24·2*	*34·6*	*16·6*	*10·1*
France and Ireland	22·9	21·6	21·1	21·9	23·8	8·7	13·7
Teutonic	*24·1*	*22·0*	*20·6*	*22·2*	*33·9*	*14·5*	*9·5*
Latin	*27·0*	*25·0*	*23·4*	*25·1*	*30·2*	*13·3*	*8·8*

TABLE VII.—*Age-distribution per 100,000 of total population, by groups.*

Age.	Total (1870).	Total, 1900.			Scandinavia, 1900.		West Central, 1900.		Southern, 1900.		France and Ireland, 1900.		Total, 1900, omitting Spain and Portugal.	
		Total.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
Under 1	2,654	2,604	1,316	1,288	1,330	1,288	1,369	1,347	1,316	1,265	1,155	1,143	1,342	1,315
1—4	9,273	9,198	4,622	4,576	4,865	4,744	4,832	4,826	4,909	4,758	3,545	3 515	4,602	4,561
Under 5	*11,927*	*11,802*	*5,938*	*5,864*	*6,195*	*6,032*	*6,201*	*6,173*	*6,225*	*6,023*	*4,700*	*4,688*	*5,944*	*5,876*
5—9..........	10,671	10,592	5.323	5,269	5,583	5,432	5,502	5,488	5,648	5,490	4,284	4,278	—	—
10—14	9,939	10,004	5,029	4,975	5,302	5,176	5,114	5,091	5,309	5,193	4,329	4,287	—	—
5—14....	*20,610*	*20,596*	*10,352*	*10 244*	*10,885*	*10,608*	*10,616*	*10,579*	*10,957*	*10,683*	*8,613*	*8,565*	*10,271*	*10,177*
15—19	9,077	9.332	4,644	4,688	4,836	4,743	4,796	4,822	4,174	4,606	4 359	4,381	—	—
20—24	8,594	8,766	4 286	4,180	4,155	4.250	4,487	4,665	3.961	4,250	4,155	4,299	—	—
15—24........	*17,671*	*18,098*	*8,930*	*9,168*	*8,991*	*8,993*	*9,283*	*9,487*	*8,435*	*8,856*	*8,514*	*8,680*	*9,015*	*9,497*
25—29........	7,675	7,787	3,805	3,982	3,498	3,696	3,270	4,149	3,128	3,684	3,901	3,960	—	—
30—34..........	7,021	6,927	3,384	3,543	2,877	3,151	3,479	3,626	3,153	3,382	3,556	3,622	—	—
35—39...........	6,358	6,277	3,078	3,199	2,806	3,121	3,073	3,190	2,919	3,036	3,385	3,124	—	—
40—44	5,915	5,765	2,813	2,952	2,597	2,888	2,723	2,856	2,821	3,007	3,132	3,182	—	—
25—44	*26,969*	*26,756*	*13,080*	*13,676*	*11,778*	*12,856*	*13,245*	*13,821*	*12,321*	*13,139*	*13,977*	*14,188*	*13,127*	*13,660*
45—49...........	5,321	4,987	2,427	2,560	2,324	2,568	2,304	2,449	2,445	2,583	2,793	2,856	—	—
50—54	4,894	4,594	2,192	2,402	2,015	2,300	1,995	2,201	2,376	2,565	2,576	2,816	—	—
55—59........	3,862	3,898	1,866	2,032	1,822	2,075	1,693	1,899	1,931	2,015	2,308	2,437	—	—
45—59.........	*14,077*	*13,479*	*6,485*	*6,994*	*6,191*	*6,943*	*5,992*	*6,549*	*6,752*	*7.163*	*7,682*	*8,109*	*6,477*	*6,965*
60—64...........	3,401	3,379	1,588	1,791	1,500	1,749	1,373	1,601	1,743	1,894	2,050	2,229	—	—
65—69	2,309	2,433	1,136	1,297	1,270	1,499	980	1,177	1,171	1,230	1,516	1,684	—	—
60—69	*5,710*	*5,812*	*2,724*	*3,088*	*2,770*	*3,248*	*2,353*	*2,778*	*2,914*	*3,124*	*3,566*	*3,913*	*2,719*	*3,085*
70—74	1,634	1,771	814	957	952	1,162	664	828	866	927	1,148	1,324	—	—
75—79..........	845	1,028	468	560	640	812	390	500	479	489	635	758	—	—
80 and over....	557	658	280	378	384	560	226	315	293	351	392	548	—	—
70 and over ..	*3,036*	*3,457*	*1,562*	*1,895*	*1,976*	*2,534*	*1,280*	*1,643*	*1,641*	*1,767*	*2,175*	*2,630*	*1,573*	*1,914*
Total	**100,000**	**100,000**	**49,071**	**50,929**	**48,786**	**51,214**	**48,970**	**51,030**	**49,245**	**50,755**	**49,227**	**50,773**	**49,126**	**50,774**

TABLE VIII.—*Age distribution of* 100,000 *of each country*, 1900.

Age-group.	Sweden.	Norway.	Finland.	Denmark	Holland.	Belgium.	Germany.	Austria.	Switzer-land.	England.	Scotland.	Italy.	Spain.	Portugal.	France.	Ireland.
Males.																
Under 1	1,260	1,314	1,440	1,370	1,452	1,286	1,461	1,396	1,165	1,229	1,297	1,484	1,040	1,261	1,175	987
1—4	4,575	5,170	5,123	4,914	5,099	4,601	5,099	4,742	4 519	4,475	4,703	4,987	4,826	4,724	3,486	4,056
Under 5	5,835	6,484	6,563	6,284	6,551	5,887	6,560	6,138	5,714	5,704	6,000	6,471	5,866	5,985	4,661	5,043
5—14	10,635	11,569	10,843	10,833	10,984	10,031	10,880	10,229	9,817	10,483	10,903	10,872	11,041	11,182	8,408	10,376
15—24	9,020	8,573	9,306	8,962	9,080	9,389	9,236	8,992	9,251	9,469	9,857	8,634	8,025	8,648	8,323	10,144
25—44	11,697	10,627	12,715	11,955	12,333	13,675	13,137	13,044	13,735	13,582	13,050	12,068	12,942	11,698	14,155	12,411
45—59	6,276	5,746	6,397	6,184	6,124	6.262	5,878	6,535	6,309	5,822	5,585	6,901	6,687	6,082	7,884	5,951
60—69	3,066	2,651	2,369	2,701	2,695	2,764	2,307	2,732	2,750	2,139	2,069	3,019	2,803	2,663	3,594	3,327
70 and over	2,268	2,344	1,284	1,795	1,616	1,664	1,210	1,455	1,498	1,164	1,143	1,774	1,444	1,531	2,189	2,060
Total Males....	**48,797**	**47,994**	**49,477**	**48,714**	**49,383**	**49,672**	**49,208**	**49,025**	**49,074**	**48,354**	**48,607**	**49,739**	**48,808**	**47,789**	**49,214**	**49,342**
Females.																
Under 1	1,219	1,265	1,387	1,345	1,416	1,256	1,434	1,374	1,149	1,220	1,267	1,423	1,016	1,169	1,166	947
1—4	4,416	5,014	5,041	4,858	5,018	4,563	5,081	4,753	4,546	4,502	4,651	4,793	4,737	4,619	3,499	3,939
Under 5	5,635	6,279	6,428	6,203	6,434	5 819	6,515	6,127	5,695	5,722	5,918	6,216	5,753	5,788	4.665	4,886
5—14	10,336	11,100	10,707	10,622	10,851	9,973	10,814	10,181	9.794	10,512	10.610	10,559	10,858	10,820	8,393	10,043
15—24	8,714	9,245	9,150	9,176	9,199	9,296	9,248	9,178	9,338	10,105	10,031	8,821	8,732	9,488	8,477	10,422
25—44	12,758	12,780	12,787	13,207	12,847	13,664	13,400	13,484	14,048	14,861	14,174	12,642	13,908	13,473	14,313	13,114
45—59	7,178	6,703	6,896	6,717	6,351	6,533	6,502	7,103	7,022	6,336	6,224	7,094	7,253	7,271	8,281	6,633
60—69	3,652	3,045	2,792	3,090	2,968	3,023	2,742	3,094	3,251	2,514	2,680	3,130	3,060	3,320	3,971	3,419
70 and over....	2,930	2,854	1,763	2,271	1,967	2,020	1,541	1,803	1,778	1,566	1,756	1,799	1,628	2,051	2,686	2,141
Total Females	**51,203**	**52,006**	**50,523**	**51,286**	**50,617**	**50,328**	**50,792**	**50,975**	**50,926**	**51,646**	**51,393**	**50,261**	**51,192**	**52,211**	**50,786**	**50,658**

TABLE IX.—*Death-rates per 1,000 of each sex at each age, by groups.*

Age.	Total.*			Scandinavia.		West Central.		France and Ireland.	
	Total.	Males.	Females.	Males.	Females.	Males	Females.	Males.	Females.
1900.									
Under 1	198·6	217·3	179·5	140·3	113·6	249·9	203·7	148·3	119·6
1—4...........	23·5	23·8	23·3	19·5	18·0	22·5	21·9	17·6	16·9
Under 5	*62·9*	*67·5*	*58·3*	*45·5*	*38·4*	*72·7*	*61·6*	*49·8*	*41·9*
5—14	4·0	3·8	4·1	4·9	5·4	3·6	3·8	3·8	4·2
15—24	5·1	5·2	5·0	6·1	5·9	4·8	4·4	6·4	6·0
25—44	8·0	8·3	7·7	7·8	7·2	8·1	7·4	9·6	8·4
45—59	16·9	19·4	14·5	15·1	11·8	20·6	15·1	20·0	14·8
60—69	40·8	44·0	38·0	35·0	28·7	46·1	39·6	44·1	36·8
70 and over	118·3	123·1	114·4	106·7	98·7	120·8	111·9	128·1	115·8
Total	**20·1**	**21·1**	**19·1**	**18·1**	**16·8**	**21·0**	**18·7**	**21·2**	**19·2**
1870.†									
Under 1 ...	264·4	288·4	240·1	168·9	141·3	312·3	254·3	234·5	196·5
1—4	41·5	42·1	41·0	27·5	26·1	38·2	37·1	32·5	31·9
Under 5	*90·4*	*96·1*	*84·5*	*58·4*	*52·0*	*98·1*	*84·2*	*74·4*	*65·9*
5—14	7·0	6·8	7·1	6·5	6·4	6·4	6·4	6·2	6·9
15—24	7·7	8·3	7·2	6·5	5·7	7·1	6·5	11·0	8·1
25—44	11·3	11·7	10·9	8·9	8·7	11·4	10·6	13·1	11·3
45—59	20·1	22·3	18·2	19·1	14·8	23·4	18·6	20·4	17·2
60—69	46·5	48·5	44·6	44·6	37·9	51·9	47·2	76·7	39·7
70 and over	123·4	124·6	122·5	115·6	107·9	131·5	128·0	164·6	117·3
Total	**25·9**	**27·1**	**24·6**	**20·2**	**18·7**	**27·2**	**24·4**	**25·3**	**22·9**

* Including Italy (given in Table X), and excluding Spain and Portugal.

† Including Italy, and excluding Spain, Portugal and the smaller German States.

TABLE X.—*Death-rates per 1,000 of each sex at each age, by countries,* 1900.

Age-group.		Sweden.	Norway.	Finland.	Denmark.	Holland.	Belgium.	Germany.	Austria.	Switzerland.	England.	Scotland.	Italy.	France.	Ireland.
Under 1	M.	118·7	115·6	181·9	155·1	181·7	184·4	282·2	298·1	194·6	196·2	164·5	196·4	150 2	129·1
	F.	94·6	92·9	151·7	123·7	149·1	149·6	232 1	242·1	152·2	156·6	133·4	176·0	120·9	106·1
1—4	M.	16·7	12·9	37·0	11·1	17·0	16·7	22·4	29·4	13·8	21·3	24 0	35·0	17·8	16·1
	F.	15·6	12·1	33·5	10·1	16·5	15·9	21·7	29 6	12·9	20·5	23·2	37·2	17·0	16·2
Under 5	M.	38·7	33·7	68·8	42·5	53·6	53·3	80·3	90·5	50·7	59·1	54·4	72·8	51·2	43·0
	F.	32·6	28·4	59·0	34·7	45·7	44·8	68·1	77·3	41·0	49·5	46·8	69·0	38·2	33·7
5—14	M.	4·4	3·5	8·7	3·3	2·9	2·9	3·6	4·8	3·2	3·2	3·6	4·5	3·9	3·3
	F.	4·9	3·9	9·0	3·8	3·1	3·2	3·7	5·3	3·4	3·3	4·2	5·0	4·2	4·3
15—24	M.	5·8	7·9	6·2	4·7	4·9	4·4	4·9	6·0	4·7	4·0	5·1	5·6	6·5	5·9
	F.	5·9	6·1	6·8	4·6	3·9	4·7	4·3	6·2	5·1	3·5	5·3	5·9	6·0	6·2
25—44	M.	7·8	8·2	8·2	7·1	6·3	7·2	8·0	9·4	8·2	8·2	9·2	7·6	9·6	9 5
	F.	6·9	7·8	8·1	6·5	6·7	6·8	7·2	9·0	7·5	6·8	8·4	8·2	8·3	9·6
45—59	M.	14·2	13·5	16·9	16·4	15·2	18·5	20·5	21·7	21·7	21·1	22·1	15·8	20·1	19·1
	F.	11·3	11·3	12·9	12·2	12·3	12·8	14·2	16·7	15·7	16·1	17·8	12·9	14·5	18·1
60—69	M.	32·4	29·8	41·8	39·0	38·1	42·5	45·8	48 6	48·1	46·5	50·8	40·3	44·8	37·9
	F.	26·8	25·8	34·0	30·9	32·9	32·3	38·8	44·9	43·1	39·8	40·5	38·2	36·7	38·3
70 and over	M.	104·2	94·3	113·4	122·7	110·3	116 1	121·7	128·1	122·5	117·7	117·3	128·7	129·5	114·8
	F.	96 0	87·9	106·3	111·6	104·4	105·4	114·8	125·0	117·4	102·0	102·0	129·5	116·0	113·0
All ages	M.	17·2	16·5	21·4	17·6	17·8	18·3	22·1	25·2	19·0	18·2	18·5	22·5	21·6	17·9
	F.	16 3	15·0	20·0	15·9	16·4	16·4	19·6	23·3	17·3	15·8	17·3	21·5	19·3	17·6
	Total ...	16·8	15·7	20·7	16·7	17·1	17·3	20·8	24·3	18·1	16·9	17·9	22·1	20·5	17·7
	Do. corrected	15·2	14·5	20·8	16·1	16·7	17·3	21·3*	24·2	18·8	18·7	17·9	21·1	18·5	17·7
	Do. corrected '66–75	19·6	17·8	20·3	19·7	24·1	23·7	28·3	28·0	24·3	22·2	22·2	30·9	25·1	17·1

* Only the five largest States.

Notes on Tables VII to X.

The subject of mortality at different ages involves an amount of detail which precludes it from the scope of an Address dealing with the general question of the relation of the death-rate to that of birth. It is of such importance, however, that I am conscious that my treatment of the latter would be incomplete without some reference to it in an appendix.

The variety in age and sex-distribution in the different countries is given in Table VIII, and summarised in Table VII. In dealing with the death returns, however, I have excluded the population of the smaller German states in 1870, and that of Spain and Portugal for both that census and the one of 1900, because the earlier returns are either wanting or incomplete in those cases. Thus the aggregate of the earlier period is 26 millions less than that dealt with in my Address, and, similarly in 1900, the total falls short of the latter by 24 millions. Again, in compiling the death returns, I have taken for the earlier period the mean of the ten years, 1866 to 1875, except where the census was taken in a year other than 1870 or the beginning of 1871. For 1900 I have taken the year of enumeration, unless it was flagrantly out of line with its neighbours, in which case an average has been struck. The rates thus differ slightly from those used in Tables IV, V, and VI.

The age-periods adopted are those roughly represented by the terms infancy, childhood, adolescence, prime, decline, senescence and old age. In regard to decline, I am disposed, on reconsideration, to prefer the limit of 54 years to that of 59, especially in the case of women, but I have not had the time to effect the necessary alteration in the calculations.

One of the objects I had in view—that, indeed, which suggested to me the subject of my Address—was to ascertain how far a standard age-distribution could be obtained from combination of the returns of the different countries, as was suggested by Dr. Ogle to the International Institute of Statistics more than twenty years ago. Since then, Dr. Sundbärg has presented his "Standard population," based on the Swedish returns from 1805 to 1875, which differs considerably from that of Dr. Ogle and the later return I now present. For the purpose for which such a standard is chiefly required, viz., its application to the death-rates of different countries in order to render comparison possible upon a common basis, it seems statistically sounder to make use of the aggregate of the countries themselves than to fly to the distribution of any individual country, however wide chronologically may be the basis upon which it stands. The standard, being for contemporary use, must obviously be kept up to date, for though the age-distribution changes very slowly, especially in large aggregates, such as those under consideration, it does vary, and, as shown in the two first columns of Table VII, the modifications taking place towards the middle and decline of life are sufficient to be of importance when using the return as is here suggested.

It may be noted that the remark I made in the Address as to the little difference between the crude and the standardised rate, as a rule, is borne out by the return. The greatest change is in the case of France, where the infantile mortality is diluted by the great addition to the young consequent upon the application of the standard proportion. In Sweden, where there is also considerable reduction in the rate under standardisation, the effect is produced by the large diminution in the proportion of those over 45, which outweighs the addition made to that of the young. The rate is raised more in England than in any other, partly by a proportional addition to the stock of infants, but still more by the extra weight assigned to the aged, a result of standardisation exactly opposite to that just mentioned in the case of Sweden.

Owing to the different methods of obtaining the returns for compilation, comparison between 1870 and 1900 cannot be accurately instituted, but the results at the beginning and the end of life are worth putting side by side:—

Group.	Under 1.		Under 5.		60—69.		70 and over.		All ages.	
	1870.	1900.	1870.	1900.	1870.	1900.	1870.	1900.	1870	1900.
Scandinavia	155·3	127·2	54·8	42·0	40·9	31·6	111·1	102·2	19·4	17·4
W. Central	283·4	226·0	91·1	67·2	49·5	42·5	129·6	115·8	25·9	19·8
Italy	294·3	186·4	127·1	70·9	47·8	39·2	120·4	129·1	30·9	22·1
France and Ireland	215·5	134·0	70·2	45·8	42·1	40·3	119·0	121·3	24·1	20·2
Total	264·4	198·6	90·4	62·9	46·5	40·8	123·4	118·3	25·9	20·1

PROCEEDINGS *on the* 16TH NOVEMBER, 1909.

AFTER the formal business of the meeting had been disposed of, the PRESIDENT announced that several essays had been received in the Howard Medal Competition. The Referees were, however, of opinion that, although one or two essays showed considerable merit, none was sufficiently complete to justify an award. The Council had therefore determined not to award the Howard Medal this year.

Mr. R. H. REW (Honorary Secretary) announced that the subject for the next Howard Medal Competition, 1910-11, would be, "A statistical review of the variation during the last twenty years in the consumption of intoxicating drinks in the United Kingdom, and in convictions for offences connected with intoxication, with a discussion of the causes to which these variations may be ascribed." Essays were to be sent in before 30th June, 1911.

The PRESIDENT, in presenting the Guy Medal in Silver to Sir Edward Brabrook for his Papers on the Progress of Friendly Societies, said it was a matter of extreme satisfaction to him that his first duty as President should be this presentation. It was usual to attach to the award of the Medal the title of some definite Paper, and the nominal occasion of present award was Sir Edward Brabrook's Paper on "Social Insurances," read before the Society last December; but he had also given them a long series of instructive Papers on a subject to which he had given many years of study. The information which Sir Edward Brabrook had put at their disposal was especially valuable in view of the fact that just now Friendly Societies and Old Age Pensions were so much in the air. He had the greater pleasure in handing the Medal to him as being an old personal friend.

The PRESIDENT having delivered his Address,

Sir CHARLES DILKE proposed a hearty vote of thanks to the President. He did not propose to say anything with regard to the Address, but the President's opening observations required a word or two from himself. The President had begun by alluding to the endeavours of the Society to improve official statistics, and to the work it had already done in connection with the census. He had spoken with unnecessary modesty of his own qualifications for the post he now occupied, for he was at all events a statistician, and, *prima facie*, the Statistical Society ought to have a statistician as its President. There were occasions when those who were rather users of statistics than statisticians might be able to co-operate usefully with the latter; but, seeing that the Society had to keep up a high level of scientific statistics, statisticians should be the ruling authorities. Sir Athelstane Baines thoroughly deserved his distinction. The immense work he had done in connection with the Census was known in detail to few of those present. It had been collective work, and it had appeared as the work of the Census Committee in various sessions; but actually much of it had been the personal work of Sir Athelstane himself. Frequently, owing to the great difficulty of getting large meetings of the Committee, the bulk of the work had fallen on Sir Athelstane and on the Honorary Secretaries, and he, as Chairman, had done the main part. He would like especially to thank the President on behalf of those who had seen something of his work on the Census Committee. With reference to the improvement of official statistics, one matter to which no public reference had been made ought to be mentioned. A Select Committee on Official Publications had been sitting for a good many years; and that Committee, although not primarily appointed to deal with statistics, had occasionally wandered into the statistical field. It was a Committee of the House of Commons, appointed at the wish of the Treasury, with a view to reducing waste in the publication of official papers. Two years ago, as he told the Society, he thought that Committee, having touched the fringe of the subject of official statistics, ought to go into the matter more thoroughly. This year he had secured a pledge that the matter should, at all events, be considered. The result had now been published. Mr. Rew was called as a witness on the special point; but the Committee, finding he was an official, secured his assistance, not in his official capacity, but in his private capacity as Honorary Secretary of the Royal Statistical Society. After alluding to his evidence,[1] which was very worthy of perusal by all members of the Society, they reported that the Committee had been "struck by the fact that this question (*i.e.* the re-duplication of official statistics and the feasibility of securing greater co-ordination in their publication) had not received greater attention since the inquiries conducted by the Official Statistics Committee appointed by the Treasury in 1877, and by the further Departmental Committee, appointed in 1890, to inquire into questions connected with the taking of the census." That was the Report on statistics, so far as it went; but the Report went on to say that matter was not the one on which the Committee was appointed. That was true. Still, as far as the Report went, it was on their side, and it afforded a certain amount of leverage for exercising further pressure.

Sir THOMAS ELLIOTT, in seconding the vote of thanks, congratulated the Society and all who knew the President on his appointment. It was a double compliment when the President was taken from the ranks, because they all knew his qualities; and when they put him in the presidential chair he felt sure Sir Athelstane would regard it as a special distinction, and would permit them to offer him their congratulations. They all knew that the President was a great authority on vital statistics, and that only such a man could have tackled the difficult task of dealing with international figures. Anyone who attempted that task knew how extremely difficult it was, and what traps and pit-falls existed for the unwary. One ought to be very well informed on a particular subject before attempting anything like an international comparison. The President had referred to the difficulty of dealing with statistics for Europe, S.E. There was no doubt that the statistical reputation of that part of the world was low, but in the Balkan States and in Turkey something was being done to improve statistics of every kind. Those countries were now coming forward, and he had no doubt that, through the agency of the two great institutes—the International Statistical Institute and the International Agricultural Institute—the lament that they were not able to give more complete figures, so far as regards the course of European populations, would gradually be diminished. He congratulated the President on his choice of subject, because anyone who read this Address and was not a Fellow of the Society would see how very much interest attached to the Papers and Addresses which were read there. He remembered a friend of his saying that he always liked to go to a play by Ibsen, because it gave him something to talk about at supper; and he might say that he always liked to hear a Paper by Sir Athelstane Baines because it gave him something to talk about at dinner. His Paper bristled with interesting facts and finger-posts, and compelled them to ask what those facts pointed to, and what was the cause of the changes which were recorded. In what direction were these various countries going? The President had referred, at the opening of his Address, to the reception of the Paper delivered by the author of the Theory of Tittlebats, whose reward was that he was allowed to put the letters P.M. after his name, meaning Perpetual Member. They might all hope that Sir Athelstane Baines would use those letters and remain a perpetual member, and consequently give the Society many more such Papers as that which he had just presented.

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[1] Reprinted below, pp. 731—743.

The vote of thanks having been carried unanimously,

The PRESIDENT, in reply, said Sir Charles Dilke's reference to the approval of the Official Statistics Committee was a matter of great interest. As an old official, knowing chiefly Indian returns, he would like to see much greater co-ordination in the statistics they already had, and a still further extension of them in the direction indicated by their late President. Sir Thomas Elliott had referred to the population of Europe, S.E. He should have said that his own reference was entirely to the population-statistics. Like many others, he received periodically large volumes of statistics from Europe, S.E., of varying value, but these statistics were not always such as he could use. There were a great many agricultural statistics from Roumania, of which, as he was not concerned with agriculture, he could not even estimate the value. But there was no doubt that these countries were improving their statistical knowledge and methods. The only reason he had mentioned Europe, S.E., was that the population-statistics were very defective in a direction with which he was strangely familiar in his dealings with an Oriental people still further East. One could not use a set of census returns in which it was obvious that at least one-third of the women were omitted at the ages at which women might not be seen by the outside world, and this defect in the number of women between ten and twenty-five really rendered almost the whole of the return valueless for actuarial purposes. He was sorry to take exception to any phrase used by a gentleman who had spoken so kindly of him, but, in referring to a classical work like the "Pickwick Papers," one must be accurate. P.M. meant he thought not Perpetual Member, but Perpetual Master, a functionary unknown to the Society.[2]

The following were elected Fellows of the Society :—

Bagnall, Bernard Thomas Septimus.
Buchanan, James, M.A., D.Sc., F.F.A., F.I.A.
Clark, Charles C.
Darton, Oscar.
De Than, Albin.
Greenwood, Major, M.R.C.S., L.R.C.P.
Harrison, C. W. Francis, F.R.G.S.
Ker, William P.
Millard, Percy William.
Morison, Hector McDonald.
O'Malley, L S.S., I.C.S.
Turnor, Christopher.
Young, Arthur Stanley, F.I.A.

[2] On referring to our *data*, I am ashamed to have to admit that neither of us could have "satisfied the Examiners" for the Pickwick Medal.—J.A.B.

MISCELLANEA.

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I.—*A Suggestion for the International Comparison of Wages by the Use of the Median.*[1] By A. L. Bowley.

Information as to wages in many countries is accumulating rapidly, but not in a form that makes comparison adequate or easy; and in fact there seems no probability of our being able to state the average wages of adult men or of any complete group of workers in a comparable form in the near future.

The collections that have been made for this purpose in England and in America have been mainly directed to statements of wages for the same occupations (carpenters, engineers' fitters, and so on) in the various countries, and no serious attempt has, so far as I know, been directed towards bringing these statements into relation with the numbers in the occupations. It so happens that these numbers are at least as important as the wages themselves, for the purposes for which comparative statistics are frequently used. If the legislation of a country is directed towards the encouragement of a particular group of industries, it may easily happen that wages rise in these industries, that labour is diverted into them, while wages fall in less favoured groups. In particular quotations of town artisans' wage in countries where industry is favoured at the expense of agriculture, tend to exaggerate the height of wages in that country.

For an adequate statement of wages two factors are necessary, namely, an average (whether arithmetic, or the median, or the mode) for the whole group considered, and a measurement of the dispersion about that average; or in other words we need material for the curve of frequency of wages. For this purpose, estimates of wages for particular occupations are by themselves irrelevant.

My object is to suggest that if the median wage, that is the wage of the man who is half-way up the group of wage-earners considered (*e.g.*, the adult male wage-earners of a nation), was the objective, instead of the arithmetic average as is now generally calculated, results of sufficient accuracy for many purposes could be obtained with little investigation. For the calculation of the median it is not necessary to have a complete statement of wages;

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[1] Read before the Twelfth Congress of the International Statistical Institute at Paris, July, 1909.

except in the case of men whose wages are near the median. It is sufficient to know that the great majority in particular occupations are below (or above) the median, if we know with fair accuracy the numbers in these occupations. Thus it is probable that agricultural labourers, in those countries where agriculture employs less than half the working population, earn less than the median, and it is certain that skilled workmen earn more. The median then lies among the wages of town labourers or of partly skilled men. If we can state the number of agriculturists, the number of artisans, and the total number concerned, we can soon approximate to the position of the median, and a sample inquiry as to the wages of the groups among whom it lies will soon fix the position within perhaps 2 frs., marks, or shillings. The method can of course be applied to any district for which the occupation statistics are adequate. To avoid detailed description I give below a hypothetical example based on the kind of information we have in the United Kingdom.

Having determined that the median wage is, let us say, 25*s.* in the United Kingdom, 25 frs. in France, 25 marks in Germany, $8 in United States of America (to take imaginary numbers) correct to 5 per cent. in each case, the remainder of the problem is descriptive. We should seek out typical men earning wages at the median—*e.g.*, the municipal labourer in the large towns, the machine-minder in engineering, the best paid shepherd in agriculture—and in a more intensive study show what their wages are worth when expressed in commodities, what in fact is their standard of living. We should do this for each country, choosing in each the occupations paid at the median wage of each.

By this means we should have a perfectly definite comparison, which would form a basis for contrasting the economic prosperity of the wage-earners.

The same method can be applied for comparisons in time. Thus the median wage-earner in England was *circâ* 1780 an agricultural labourer earning 8*s.* a week; he is now perhaps a builder's labourer earning 26*s.*

If the calculation for the medians proves successful, it will not improbably be easy to estimate the quartiles as well; and then our statements for comparison would run somewhat as follows: In the United Kingdom in 1909 one quarter of the men ordinarily working for wages received 20*s.* or less, one half 25*s.* or less, one quarter 33*s.* or more per week.

It must be understood that the figures given in this paper are only hypothetical and illustrative.

Illustrative example.

Average weekly wages of men working full time in the textile trades of the United Kingdom in 1906:—

	Under 20*s.*	20*s.* to 25*s.*	25*s.* to 30*s.*	30*s.* and over.
	Per cent.	Per cent.	Per cent.	Per cent.
Percentage of men	18	27	19	36

A. Suppose this distribution of wages to apply to the whole sphere of manufacturing and transport industries—a supposition which can be verified when we have returns for other occupations.

B. Let us further suppose that we know that at least two-thirds, and at most five-sixths, of those engaged in agriculture earn less than 20*s.* weekly, and that the number earning over 25*s.* is negligible.

C. Further suppose that a number of low-paid or unskilled or casual labourers exist who are not included in A or B, and who certainly in no case receive as much as 20*s.* weekly.

Let the total number of adult male wage-earners be 8,000,000, and suppose that there is the following margin in the estimates of the numbers in the various groups:—

	Maximum.	Probable estimate.	Minimum.
A	7,200,000	6,500,000	5,800,000
B	1,200,000	1,000,000	800,000
C	1,000,000	500,000	0

From these data we could decide that the median wage of the three groups together was not less than 22*s.* 6*d.* and not more than 25*s.*, while the most plausible estimate would be 23*s.* 9*d.* (The arithmetic average, distinguished from the median, would be perceptibly higher.)

The calculation is as follows:—

1. Choosing those numbers which give the highest value for the median:—

	Number in group.	Under 20*s.*	20*s.* to 25*s.*	25*s.* to 30*s.*	30*s.* and over.
A	7,200,000	1,300,000	1,900,000	1,400,000	2,600,000
B	800,000	500,000	300,000	0	0
C	0	0	0	0	0
Together	8,000,000	1,800,000	2,200,000	1,400,000	2,600,000

The 25*s.* wage divides the group into equal parts.

2. Choosing those numbers which give the lowest value for the median:—

	Number in group	Under 20*s.*	20*s.* to 25*s.*	25*s.* to 30*s.*	30*s.* and over.
A	5,800,000	1,000,000	1,600,000	1,100,000	2,100,000
B	1,200,000	1,000,000	200,000	0	0
C	1,000,000	1,000,000	0	0	0
Together	8,000,000	3,000,000	1,800,000	1,100,000	2,100,000

The median falls between 20*s.* and 25*s.*, and since in the central part of a distribution curve the numbers fall regularly, may be with confidence placed near 20*s.* + $\frac{10}{18}$ of 5*s.* = 22·8*s.* As we are making the minimum estimate we will call this 22*s.* 6*d.*

3. The most plausible estimate:—

	Number in group	Under 20*s.*	20*s.* to 25*s.*	25*s.* to 30*s.*	30*s.* and over.
A	6,500,000	1,200 000	1,800,000	1,200,000	2,300,000
B	1,000,000	800,000	200,000	0	0
C	500,000	500,000	0	0	0
Together	8,000,000	2,500,000	2,000,000	1,200,000	2,300,000

The median now is at 20*s.* + $\frac{15}{20}$ of 5*s.*, *i.e.*, 23*s.* 9*d.*, and from the two previous calculations we know this to be correct within 5 per cent.

It is probable that in the course of two years we shall have material capable of giving an estimate as close as this for Great Britain, and very likely for the whole of the United Kingdom. Actually I believe that I could make the calculation with material already existing.

The question I wish to bring earnestly before the members of this Institute is, whether it is not possible, from their knowledge of the meaning of the statistics existing in their own countries, and of the economic condition of the groups concerning whom exact information is wanting, to make similar estimates, correct at any rate within 10 per cent., for international comparison.

II.—*The Applications of the Method of Correlation to Social and Economic Statistics.*[1] By G. Udny Yule.

The method of correlation has found many applications of recent years to the study of biology, more probably than to any other branch of science in which statistical methods are of service, but the applications to the problems that specially interest the student of social and economic statistics have, it seems to me, been relatively scanty. The following brief survey of the development of the method and of the work that has been done, so far as it is known to me, has been written in the hope of directing the attention of others to this very interesting method, and of suggesting further applications.

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[1] Slightly condensed from a paper read before the Twelfth Congress of the International Statistical Institute at Paris, July, 1909.

Development of the method.—The method of correlation is only an application to the purposes of statistical investigation of the well-known *method of least squares.* It is impossible, therefore, entirely to separate the special literature of the theory of correlation from that of the theory of error or of the method of least squares. Of the numerous memoirs on the theory of error the most important in the present connection is that of A. Bravais (1),[2] who as long ago as 1846 discussed the theory of error for points in space, regarding the errors as either independent or correlated, from the standpoint of the normal law of errors. He did not, however, use a single symbol for a correlation coefficient, although the product-sum formula may be regarded as due to him, in a sense—*i.e.*, the product-sum is introduced into his expression for the frequency of various combinations of errors. Sir Francis Galton was the first to devise the practical statistical method (2 and 4), and it is to him that we owe the conception of a numerical measure of the intensity of correlation—a "coefficient of correlation," as it is now termed, or "Galton's function," as it was called for some time. Sir Francis Galton also discussed the distribution of frequency exhibited by the data with which he was dealing, and in an accompanying memoir (3 and 5) Mr. J. D. H. Dickson showed that the characteristics observed were in accordance with the law of error. The general theory of two, three or more variables was investigated, again from the standpoint of the normal distribution of frequency, by Edgeworth (6) and by Pearson (7), and the latter introduced into practice, in the memoir cited, the product-sum formula for the correlation coefficient. The method used by Galton to determine his coefficient was a graphical approximation.

As the form of frequency distribution given by the law of error is not common in economic statistics, a deduction of the formulæ of correlation, and of their properties, without reference to the form of the frequency distribution is of value; this the present writer attempted in (10) and (11), the latter including worked out arithmetical examples that may be of use to the student. The author's deduction has been justified by Edgeworth (17 and 35) and by Bowley (20), on the ground that the normal law will hold for averages of samples of x_1 and x_2, even though it may not hold for the single observations, and that the correlation is the same in the two cases. The formula for partial correlation (or net correlation as I first termed it, the word partial being suggested shortly after by Professor Pearson) was first given, I believe, in (10). In the general case of n variables, the mathematics of the subject become somewhat complicated, and a special notation devised by the present writer (34) permits of considerable simplification both in the algebra and the arithmetical processes.

A formula for the probable error of the coefficient of correlation was given by Pearson in (7), but is slightly erroneous; the correct result was given two years later in the memoir by Pearson and Filon (12). The result applies in strictness to the case of the normal distribution of frequency only.

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[2] The references are to the Bibliography on p. 729.

I have already referred to (11) as containing worked-out illustrations which may be of service to those unfamiliar with the necessary work. The reader will also find proofs and illustrations in Mr. Bowley's *Elements of Statistics* (14), and in his small book on *The Measurement of Groups and Series* (20), as well as in Mr. Palin Elderton's work (27), in which the illustrations are mainly taken from cases of interest to actuaries, in the memoir by M. Lucien March (24), and in the recent communication by Professor Bresciani in the *Giornale degli Economisti* (39). For those who are not well endowed with mathematical knowledge Mr. Hooker's "elementary explanation" (36) will be of advantage, and Mr. Darbishire's tables (32) afford an extraordinarily pretty graphical illustration, based on actual records of the throws of dice, of the significance of values of the correlation coefficient ranging from 0 to 1 by steps of $\frac{1}{12}$.

The principal direction in which the theory of correlation has been recently, and probably will be further, extended is the consideration of cases in which the use of regression equations of non-linear forms is essential. Professor Pearson has considered such cases in (25), apart from any theory of frequency; and, indeed, the second part of the memoir (19) may also be regarded as a contribution to the subject. Mr. Blakeman's discussion of tests for linearity of regression may also be referred to in this connection (22). From the standpoint of the theory of frequency, Professor Edgeworth's work on the generalised law of error (26) is perhaps the most important of recent years.

Illustrative applications.—The first case of economic interest to which the theory of correlation was applied was, I believe, that discussed in two notes published in the *Economic Journal* for December, 1895, and December, 1896 (8). Mr. Charles Booth had argued that there was little evidence that the giving of out-door relief—*i.e.*, relief in the home of the recipient—under the English poor law, in lieu of relief in the workhouse, had any marked tendency to increase pauperism, the unions (districts) in which out-relief was given freely not being appreciably worse than the unions which had adopted a strong policy against the giving of out-relief. In the first note I worked out the correlation between *total pauperism* (percentage of the population in receipt of relief of any kind on one day in the year) and the *out-relief ratio*, or ratio of the number in receipt of out-relief, to the number in receipt of relief in the workhouse, for all the unions of England in 1871 (593 unions) and 1891 (580 unions). The coefficients of correlation were +0·26 and +0·39, respectively. In the second note the pauperism of males over 65 years of age was considered on the basis of two returns issued in 1890, and, dividing the unions into groups according to their rural or urban character, correlations were found ranging from +0·08 to +0·43. In a footnote the results were given of an interesting little investigation into the relations subsisting between (1) pauperism, (2) out-relief and (3) the earnings of agricultural labourers in rural unions. Taking the estimated average earnings of such labourers in 38 rural unions investigated by the Labour

Commission, the *total* and *partial* correlation coefficients found were:—

	Correlation.	
	Total.	Partial.
Earnings and pauperism	− 0·66	− 0·74
Out-relief and pauperism	+ 0·60	+ 0·70
,, earnings	− 0·12	+ 0·46

These figures were of considerable interest. In the first place it seemed that administration in such unions, as indicated by the proportion of out-relief, was nearly as important a factor in determining the amount of pauperism as poverty itself (earnings). In the second place the value of the partial coefficient between pauperism and out-relief (+0·70) eliminated the possible argument that pauperism and out-relief were merely found together because both were natural sequents of poverty. Finally, the positive partial correlation between earnings and out-relief suggested that the giving of out-relief at the time the paper was written could have no sensible effect on the normal wage-rate, whatever may have been the case earlier in the century when such relief was given much more freely. It remained possible, of course, that it might influence the age up to which normal wages were given, or the semi-charitable wages given to the old.

These investigations had interested me in the problem of pauperism, and were followed by a much more elaborate investigation, published in the *Journal of the Royal Statistical Society* of London three years later (13); the memoir was termed part i, as I hoped to return to the subject and clear up some points that were left obscure, but part ii has never been written. In this investigation the method was changed, in so far as the quantities correlated were changes in different districts during a given interval, instead of the values at a given time; the method seemed better adapted to the facts, for even though a reduction in the proportion of out-relief were always followed by a reduction in pauperism, it would not be a necessary consequence that at any one time pauperism and out-relief should be positively correlated. Further, the relation of changes in pauperism in every district to three other variables were now considered, viz., changes in (1) the ratio of out-relief to indoor relief, (2) the proportion of the aged (over 65 years of age) in the population, (3) the population itself—the growth or decrease of the population of each district being the best index I could find to its industrial prosperity. The changes in each of these variables were tabulated for all the unions of England for the two inter-censal decades 1871-81 and 1881-91, and the correlations worked out for four separate groups of unions, classified by density of population. The results were discussed by means of the regression equations in four variables, the partial correlations not being used. The full conclusions are too lengthy to reproduce here, but it may be stated that changes in the total pauperism were markedly correlated with changes in the out-relief ratio and very little with changes either in the total population or in the proportion of old. The issue of the report of the Poor Law Commission in England, and the reconstruction of the Poor Law to which it will probably lead, render any further examination of the British pauperism statistics of recent decades of little more than historic interest, but I cannot help thinking that the statistics of other countries should offer analogous data the discussion of which would serve a useful purpose.

Following the historical order, the next subject of economic interest to which we find the method of correlation applied is the relation between the marriage-rate and the price of wheat in England and Wales, over a period of years, taken as an illustration by Mr. Bowley in his *Elements of Statistics* (14). But such cases offer special difficulty, for the changes in each of the variables are of two distinct kinds, (*a*) slow secular movements, (*b*) more or less rapid changes, of sensible magnitude from year to year, and often of a quasi-periodic character; the slow movements may be quite unrelated while the short-period changes are in extraordinarily close correspondence. Mr. Hooker (15) suggested a very simple means of obviating this difficulty, namely, correlating the deviations of the two variables from the *instantaneous* average of each, instead of from the average of the whole period; for practical purposes the "instantaneous average" may be defined as the mean of the values in the seven, nine, or eleven years surrounding each year. Using this method, Mr. Hooker found a high correlation between the wave-like movements in the marriage-rate, and those in imports, in exports and in the clearing-house returns, and a somewhat smaller correlation with the movements in the price of wheat. Further, he not only correlated the deviation of the marriage-rate with the deviation of the measure of trade in the same year, but also with that in the years following and preceding. Thus the correlation of the deviation in marriage-rate with that of the amount of clearing in the following year is − 0·19, in the same year + 0·47, in the year before + 0·92, in the year but one before + 0·76; interpolating between these figures, the maximum correlation would appear to subsist between the marriage-rate and the clearing of about a year and a quarter before. It would appear then that the movement of the marriage-rate lags by about a year and a quarter behind the clearing-house returns. In his memoir of 1905 (24), M. March gives several illustrations drawn from vital statistics, using both a method practically identical with that just described (but, apparently, obtaining the instantaneous average by graphical interpolation), and also the method of correlating the changes from year to year, a method that was likewise suggested by Mr. Hooker (16) and applied to problems in another field. Amongst other examples, M. March takes the relation between fluctuations in the marriage-rate and unemployment, and in the marriage-rate and the birth-rate, in England. For the correlation between annual movements in the marriage-rate and in unemployment he finds the value − 0·73. In the following year, not knowing of M. March's work, I applied

Mr. Hooker's moving-average method to similar data, and found a correlation of – 0·87 (31, p. 96). For the correlation between fluctuations in the marriage-rate and the birth-rate in the same and the immediately following years, M. March finds the successive (positive) values 0·076, 0·278, 0·341, 0·329, 0·041; interpolation between these figures would seem to give a maximum correlation between the marriage-rate and the birth-rate of about 2·24 years after. Working again at precisely the same problem (31, p. 123), but not using data for quite the same period, I found for the correlations of the marriage-rate with the birth-rate of one, two, and three years after (deviations from instantaneous means) the values 0·352, 0·749, 0·418. These are slightly higher values than M. March's, the deviations in the earlier years that he had included being somewhat discordant, but they give almost the same value for the lag of the birth-rate with respect to the marriage-rate, viz., 2·17 years. In the memoir just cited, considerable space was devoted to the discussion of the actual nature of the relation between these fluctuations in the marriage-rate and trade, and it was concluded that the marriage-rate was more strictly related not to the actual value of the trade in the same or in any preceding year, but to the difference between the trade in the same year and the trade in the fifth or sixth preceding year; for the full argument reference must be made to the original. Mr. Heron, to elucidate the relation between fertility and social status (28), has discussed the correlation between the birth-rates (per 1,000 married women of fertile ages) and various measures of position in the social scale for different districts of London, at two different times. As measures of the social standing of the district were used such data as the proportion of servants to the population, the proportion of professional men, the proportion of general labourers, and the proportion of pawnbrokers. The correlations are in 1901 all high, and negative for any measure positively correlated with high social standing, *i.e.*, the birth-rates, as usual, are highest in the lowest strata of the population. But the correlations have undergone a great change between 1851 and 1901. In the former year they are much smaller, and may possibly be accounted for solely by the younger average age of wives in the lower classes; the necessary data as to age are lacking in the 1851 census. In 1901 the correlations are much larger, and cannot be accounted for by the different age-distributions of wives. Further, one very remarkable change has supervened in the last decade only. In 1851 the correlation between birth-rate (for wives) and infantile mortality was negative; it remained negative, though becoming gradually insensible till 1891, but in 1901 it was large and positive.

In such problems of vital statistics as those dealt with in the preceding memoirs there would seem to be still a very wide field for which the present method is especially adapted. Not only have the memoirs cited referred almost solely to English statistics, but more light has yet to be thrown, I feel certain, on the decrease of the birth-rate, and on the nature of the relation between the fluctuations of trade and the oscillations of the marriage-rate. Further, very little work has been done in connection with the statistics of mortality, and I feel sure that the method could elucidate the influence of statistically measurable conditions on the death-rate. Newsholme (30 and 38) has used the correlation coefficient in a discussion of the causes of the decrease of phthisis, but this is the only work that I can cite. The relation between the occupation of married women for gain, in factories or otherwise, and infantile mortality, is, for example, one problem still awaiting fuller treatment.

Passing to another subject, the first application to statistics of prices we find in the paper by Mr. Hooker on the suspension of the Berlin produce exchange, published in 1901 (16). Mr. Hooker worked out the correlations between the daily corn prices at Berlin, Liverpool and Chicago for the years between 1892 and 1900, in order to see whether the Berlin market was as intimately connected with the rest of the world during the period 1897-99, while the exchange was suspended, as previously. The results were irregular and unsatisfactory, and Mr. Hooker concluded that it would be better to correlate the daily price movements instead of the prices themselves. The results of the altered procedure were not published till 1905 (23). They were more consistent than with the former method, though the coefficients were smaller, and on the whole it seemed that Berlin prices were not less dependent upon the quotations at other markets while the produce exchange was suspended than they were before. Mr. Hooker gives, in the same note, an excellent illustration of the necessity for eliminating the secular movement when correlation between short period changes only is to be expected. For the years 1870-99 the correlation between the total production of maize in the United States and the farm price of maize in Iowa is $-0·28$ only; the correlation between the annual changes is $-0·84$. An illustration used in a short note on a point of theory by Mr. Hooker and myself (29) possesses also some interest of its own. It was shown that the price of wheat in England appears to exert almost as much influence on the amount of wheat exported from India as does the amount of the Indian crop, the partial regressions of the exports on the amount of the crop and on the price in England being almost the same for the period considered (1889-1904). I know of no other papers in which the theory of correlation is applied to the investigation of the relation between the prices of commodities in different markets, or between prices and supply, unless the terms may be applied to the "price" and supply of money. Dr. J. P. Norton published in 1901 (18) a small volume of most interesting studies in the New York money market, in which the method is freely used in a very able manner. Tables are given showing the correlation between the ratio of reserves to deposits in American banks and the rate of discount, and also between the reserve deviations and the rate of discount. Apart from their immediate application, the former tables are of some special interest, as the regression is very far from linear; it may, in fact, be closely represented by a rectangular hyperbola. Dr. Norton also discusses the correlations between some periodic movements by an "instantaneous average" method, but uses an interpolated logarithmic curve, instead of the mean of a small number of observations, like Mr. Hooker, to obtain his instantaneous average. Thus, for the correlation between the movement in the reserves and that in the loans in the same and the immediately following weeks, he finds the values 0·489, 0·615, 0·872, 0·958, 0·914. It is clear that the maximum in the annual oscillation of the loans occurs a little more than three weeks after the maximum in the reserves. The only other application of correlation to financial statistics that I can cite is one of the illustrations in M. March's memoir (24), in which he utilises the annual returns of the Bank of France respecting reserves, discount, deposits and payments, &c.

The influence of the weather on the crops is of great economic importance, and no excuse is necessary for introducing a notice of an investigation thereon into this brief survey. The memoir by Mr. Hooker (33) refers only to the crops in one large district of England, but it is to be hoped that it will be followed by similar investigations in other countries for which the necessary data are available. Indeed some work appears to have been done already for crops in India, but I have not been able to include the memoir in my bibliography since I have only seen a brief abstract (Asiatic Society of Bengal, Calcutta, Mr. S. M. Jacob, "On the correlation of areas of matured crop and the rainfall, and certain allied problems in agriculture and meteorology": abstract in *Nature*, London, 18th March, 1909, p. 89). Mr. Hooker considers ten different crops, for which annual estimates of yield are available for twenty-one years, and, as factors of the weather, rainfall and accumulated temperature above 42° Fahrenheit. The weather factors are averaged for periods of eight weeks overlapping by four weeks, and the crop is correlated with the weather in each eight-weekly interval from a period near, or rather later than, the usual harvest, back to a time preceding the previous harvest. The inclusion of a period so long before the crop is even sown was found to be necessary, as the weather of one year influences the character of the seed-crop, and hence indirectly the yield of the crop in the next following year; speaking generally, moreover, the results indicate a certain opposition between the conditions necessary for good seed and those necessary for a bulky crop. For the detailed conclusions reference must be made to the original.

The short note by Miss Alice Lee in the *Economic Journal* of last year (37) breaks new ground. Miss Lee correlates the percentage of not-unemployed in certain trades-unions, as shewn by the Board of Trade Returns, with the rate of increase, from year to year, in the value of imports of articles wholly or mainly manufactured, and finds a positive correlation of 0·31. Taking the rate of increase of the not-unemployed with the rate of increase of manufactured imports, the correlation is + 0·47. Miss Lee concludes that manufactured imports do not check but favour the tendency to greater employment. It appears to me, however, that the matter requires further investigation; the result given is mainly dependent on the short period movement of trade; in a period of booming trade imports of all kinds rise and employment increases. The method does not seem adequate for elucidating the existence or otherwise of a secular relation.

It is unlikely that, in the list of memoirs attached to this review of recent work, I have included all those which should have found a place, and I must apologise in advance for any omissions. In certain cases, of course, memoirs have been deliberately excluded; thus, with the exception of Sir Francis Galton's work, I have purposely omitted all memoirs on heredity and allied subjects, since, though they are often of high importance from the sociological standpoint, I hardly consider that they fell within the intended scope of this note.

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III.—*Improvement of Official Statistics.*

THE Report of the Select Committee of the House of Commons on Publications and Debates Reports (285 of 1909) contains the following paragraph:—

"In addition to hearing evidence regarding particular publications, both from the Controller of the Stationery Office and from the Departments from which they emanated, your Committee desired Mr. Rew, of the Board of Agriculture, to attend and give evidence, as Honorary Secretary of the Royal Statistical Society, on the general question of the preparation of official statistics. In the evidence, given either this year before the Committee or in the three previous sessions, the question of the reduplication of official statistics and of the feasibility of securing greater co-ordination in their publication has frequently arisen in an incidental manner. Your Committee have been struck by the fact that this question has not received greater attention since the inquiries conducted by the Official Statistics Committee appointed by the Treasury in 1877, and by the further Departmental Committee, appointed in 1890, to inquire into certain questions connected with the taking of the census. Your Committee, however, have come to the conclusion that this question is not within the terms of their own reference and is not the object for which they and the Select Committee on Publications of 1907 and 1908 were appointed."

Mr. Rew's evidence, to which the Report refers, was given on 1st July, 1909, and was (slightly condensed) as follows:—

Chairman (Mr. Toulmin).—You are honorary Secretary and Vice-President of the Royal Statistical Society?—Yes.

I think you take an interest even wider than that?—Yes. I am a member of the International Statistical Institute.

What can you tell us about the subject of Government statistics?—Perhaps I might refer to the action taken by the Royal Statistical Society with regard to this subject; that is to say, the improvement of official statistics. The question has engaged the attention of the Society for many years past from time to time; and I propose, if the Committee will allow me, to refer very briefly to the manner in which it has been brought under their notice and to the action they have taken. As long ago as 1871 a paper was read before the Society by Mr. Purdy, then Principal of the Statistical Department of the Poor Law Board, and one of the honorary secretaries of the Society, on "Suggestions upon the Preparation and Printing of Parliamentary Statistics." After referring in detail to some of the defects of the statistics of that day, he concluded by suggesting the establishment of a department "which should be an intermediary between Parliament and the various Government Offices," the principal duty of which was to exercise some kind of supervision over returns moved for in Parliament, and to keep records of all such returns. Then in 1888 the Society appointed a committee in reference to the census of 1891, which dealt with various questions relating to the census, and which specially recommended, *inter alia*, the appointment of a separate Census Branch of the General Register Office, which was to be charged with the duty of making available "with as much uniformity as may be practicable" the principal results of the censuses of the United Kingdom, India, and the Colonies, and was in other ways to improve and co-ordinate demographic statistics.

Was any notice taken of that ?—No, nothing was done. Then in 1894 the society sent a memorial to Mr. Shaw Lefevre (now Lord Eversley), then President of the Local Government Board, and followed this by a deputation urging that effect should be given to the recommendations of the Departmental Committee of 1890 on the census. As the Committee may be aware, that was a Departmental Committee appointed by the Treasury to inquire into certain questions connected with the taking of the census. That was appointed in February, 1890. There is a great deal, of course, in their report which is not immediately before this Committee. The only point which bears upon the subject with which I am at the moment dealing is the recommendation that if the enumeration be taken more frequently than hitherto, a permanent Census Branch of the General Register Office should be established in England, if not in Scotland and Ireland.

That was the result arrived at by the Departmental Committee of 1890 ?—Yes, that was one of their recommendations. They made various recommendations with regard to the details of the census, and also favoured a quinquennial census.

Was any notice taken of their recommendations ?—No, nothing has been done, so far as I am aware. In 1896, Mr. J. B. Martin, President of the Society, in his presidential address before the Society, gave a valuable summary of the steps which had been taken in our own and other countries for the development of statistical research and the organisation of official statistics, and noted that there had been during the preceding five and twenty years, "both at home and abroad, a very marked development in the collection of statistics, as well as in the providing of suitable machinery to arrange and digest them when collected." The interest of that summary, if I may say so, is that it collected from different European countries a great deal of information as to the system under which they gather their official statistics. Then in 1899 a special Census Committee of the Society, under the chairmanship of Sir Robert Giffen, endorsed the recommendations of the Committee of 1888, and their adoption was again urged on the Government. In 1904 a deputation from the Society waited upon Mr. Walter Long, then President of the Local Government Board, to urge the institution of a quinquennial census and the establishment of a permanent Census Office. Those are, in fact, the two main points which the Society has for a long time advocated. Then in 1907 Sir Charles Dilke, who was then President of the Society, in his presidential address drew prominent attention to this subject. He took for the subject of his address the defects of official statistics and suggestions for their improvement. He strongly advocated the adoption of some measures to improve and co-ordinate national statistics. That address in itself, perhaps, I might be allowed to bring to the notice of the Committee as a whole, without attempting to summarise it. It is largely concerned with illustrations of the lack of co-ordination.

I understand it deals with inconsistencies in the collection of similar statistics for England, Ireland, and Scotland, for instance?—Yes, that was one of the points referred to. Sir Charles Dilke said: "The most pressing need is that we should hand over to a Statistical Department those statistics which are collected by various Departments in the course of administrative work, and of which the publication is not necessary for the purposes of administration. This Statistical Department should arrange such statistics (except those purely administrative) as are collected by the other Departments."

Have you the recommendation of the Census Committee of your Society?—The Census Committee of 1888?

No, 1908?—Yes.

You have just referred to that?—I will refer to that in a moment. I was going to mention as another fact a Paper read by Mr. Bowley before the Society last year, which dealt with the question of the improvement of official statistics. To that paper I also beg to refer the Committee for various points in connection with the details of the subject. He concluded by saying that an office of some description should be set up, as follows: "Should such an office be created *de novo*, gradually absorb part of the statistical work already done, and as soon as possible be prepared to undertake the wider duties described, or should an existing office expand and add general statistical work to the special work already done by it? I am inclined to think that the preferable plan is the former. Let an office be formed, whose first duty shall be to undertake the decennial census and frequent supplementary inquiries. Let it co-operate with, perhaps ultimately absorb, the Registrar-General's departments. Let it take over the tabulation and publication of statistics collected by administrative departments, *e.g.*, the occupation statistics of the Factory Inspectors. Let it arrange a *modus vivendi* with the Board of Trade in whatever way will secure the best delimitation of functions and completeness of information. It should, perhaps, be subject for constitutional purposes to the Treasury." That is Mr. Bowley's suggestion. I am not putting it forward as representing the views of the society, but as representing his views. This question having been so prominently brought before the society, both by the President and by Mr. Bowley, it was referred to a Census Committee of the society, which was at that time set up to consider details and suggestions with regard to the taking of the next census. That Committee, apart from details, again urged the desirability of a quinquennial census, or intermediate census between the present decennial censuses, and also the establishment of a permanent census office. Perhaps I might read this passage: "They would here suggest that to secure uniformity of results within the United Kingdom would be one of the principal advantages of a permanent office, the constitution of which accordingly would have to be framed on a wider basis than that formerly proposed. They do not desire to deal with this point otherwise than in outline, and would therefore limit themselves to the expression of the opinion that, assuming their previous recommendations to be adopted, and the Census Acts to be in permanent operation, a permanent Census Office should be established under the Treasury. The object might be attained by establishing a Census Commission for the United Kingdom, to consist of the Registrars-General of England and Wales, Scotland, and Ireland, who would be responsible for conducting the decennial and quinquennial census, as suggested by this Committee. Whether this census scheme be adopted or postponed, the Committee are of opinion that, in consideration of the close relations between the statistics of population and those of other social factors, it would be highly advantageous that a Consultative Committee should be appointed, composed of the statistical officers of the Departments dealing with finance, industries, trade, pauperism, education, and similar subjects. The creation of such a body would, in the opinion of the Committee, effect a material advance in the direction of the co-ordination, simplification, and improvement of official and Parliamentary statistics."

Those are the recommendations of your Statistical Society ?—Yes, that briefly summarises the way in which it has come before the Statistical Society. Perhaps I might draw the attention of the Committee to the Treasury Committee on Official Statistics of 1877-79, which presented three reports, but the third Report is the only one which contains anything very germane to the present point, or rather, the second Report did deal with one point which is of some general interest, and that was with regard to the divergence which exists in the years for which statistics are collected and published. There are a great many years, as the Committee are aware, taken for the purposes of returns, and the Committee in their second report of 1878 suggested that only two years should be adopted—namely, the financial year ending 31st March, and the calendar year. In the third report they discussed the general question referred to them. They start by saying they consider they have two objects to accomplish—to lay down principles for the division of the existing official statistics, and to recommend some plan for their future conduct and control. I need not read their recommendations in full, but they were practically four. First of all they suggested that all the statistically important departments should appoint a statistical officer, who should have the supervision of all the statistics for presentation to Parliament. Then they suggested that a small central statistical department should be appointed subordinate to the Treasury, which should be charged with the preparation of the annual abstracts; with the editing of a miscellaneous volume of statistics; with the compilation of an annual index to Parliamentary returns, and other returns; and with the performance of such statistical duties at present performed by the Statistical Department of the Board of Trade as are not directly connected with the administration of the Board of Trade; and that they should settle the form of statistics, or, rather, that when a form of statistics had been settled it should not be altered without reference to them. They also suggested that the head of that central Statistical Department should be temporarily associated with a person of position having the requisite qualifications and time to go through the statistics of each Department with the statistical officer of that Department. They thought that might be done in the course of a year. Then, after that preliminary work had been done, they suggested the establishment of a small permanent Board of Commission to carry on the supervision of statistics, and to secure "a continuance of order and harmony in the general body of returns presented to Parliament."

Mr. Lehmann.—Mr. Shaw Lefevre and Mr. Farrer disagreed with that recommendation?—Yes; they doubted whether co-operation could be effectively obtained by such a Board as that suggested in Part II of the report. The Committee will see that Mr. Farrer, afterwards Lord Farrer, then Secretary to the Board of Trade, did not sign the report, and, in fact, dissented from it; firstly, on the ground that the report had been adopted without sufficient information and discussion. He pointed out, as you will see from the Proceedings of the Committee, that they did start to go through the whole of the statistics of each Department, and that examination was not completed. It was found, as he said, beyond their time and power, and he also makes a point of the fact that very little evidence was taken on the subject, and especially from the statistical officers concerned, with the exception of Mr. Giffen.

Chairman.—What is the present position? Has anything of that nature been done?—No.

Mr. Harold Cox.—Did Lord Farrer take any more general objections to the proposals?—He thought the proposals as a whole were unworkable.

Mr. Lehmann.—He took very detailed objections on page 15 and onwards?—Yes.

Mr. Harold Cox.—Did not he also take objections in principle?—He made a substantive recommendation. His own proposal is to be found on page 31. He agrees in deprecating absolute control by one Department over another, and he desired to bring in the authority of the Treasury, and then he goes on: "My proposal—a very modest one—is as follows: Leave the Departments as they are; do not abolish the present Statistical Department of the Board of Trade, or create a new Department at the Treasury. Create no Board; let the Departments have a chief statistical officer, or not, according to their wants; and let it be open in the case of each separate set of statistics to arrange either for the compilation and editing of the statistics by the Department which collects them, or for entrusting that task to the Statistical Department of the Board of Trade. For the purpose of effecting such arrangements, and also for the purpose of revising the statistics of each Department, let the Treasury appoint some person of weight to be associated with the head of the Statistical Department of the

Board of Trade, and let these two be associated when necessary in the case of each Department with some officer named by that Department. Let such a committee inquire by turns into the statistics of each Department, and let their report in each case be sent in to the Department concerned, to the Treasury, and to the Board of Trade. Let these inquiries take place from time to time as required, without any limitation to a year or other fixed time; let this process go on until the national statistics are revised; and let it be repeated afterwards as occasion may require." That, I think, was his recommendation.

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Have you considered whether there would be any net economy in the creation of a new Statistical Department?—It would depend very largely on what its functions would be. Personally, I do not see that any suggestions that have been made would effect any substantial economy, except perhaps in one or two cases. For example, take the specific case of the office suggested in connection with the Census; I think if there were a combined office dealing with the censuses of the three countries it would certainly result in economy, because the returns could be put more together and into closer shape.

But that clearly would hardly cover our reference with regard to publications. We are dealing with statistics published and submitted to Parliament, and the Census is rather a distinct thing, of course, and very much more expensive than anything. Have you formed any opinion as to whether the volumes of statistics now published, apart from the census, would cost less if we had a specific Statistical Department, and the various books were published by the same Department which obtained most of the statistics?—I myself do not think the setting up of a Statistical Department responsible for all Government statistics is feasible.

Nor do you think it economic?—I do not think it would be economic; but if you were to set up a body to supervise returns moved for in Parliament, or returns published by Royal Commissions and Committees, which very often involve a considerable amount of expense, and who could advise and perhaps revise with regard to their publication, I think some economy might be effected.

Do you think that could not be equally well effected by the House giving the Treasury general instructions to advise the House, or the Minister, when any return is moved for, as to whether it should be accepted or not?—I should be a little inclined to demur to that, because, of course, though the Treasury officials individually might be exceedingly competent on questions of statistics and economics, it does not necessarily come within their functions to determine what is or is not desirable from a statistical point of view. From my point of view it would be desirable that any revising body for statistical publications should be to some extent expert on the subject.

Chairman.—An expert who would advise is the idea present to your mind?—Yes, and to revise. If you are going to have control over statistical returns, I think it is important that a controlling body should be set up with a view of being competent to decide on statistical matters generally.

Mr. Lehmann.—But to advise merely as to the form in which the statistics should be prepared?—No, I think it could go beyond form. It ought, of course, to have a full knowledge of what is existing on the subject on which a special return is desired. That is the first thing. Then I think very often returns are prepared by Commissions, or even Departments, which might be probably condensed if they were revised, or advised upon, by a competent statistical authority.

On the other hand, it might be found necessary by the statistical officers that forms should be set out at greater length for the purpose of clearness?—Yes, the statistical officer responsible for the return in the first instance.

So that economy is not a necessary accompaniment of a proper statistical display?—No; I think to attempt to revise statistical returns, purely with a view to reducing the cost of printing and nothing else, would be undesirable.

Chairman.—Not merely printing, but cost of preparation?—Yes.

Mr. Harold Cox.—What would this new body do which this Committee is incapable of doing? This Committee has already called many witnesses from various Departments, and it has asked them about the forms of their returns, and this Committee is always willing to hear expert evidence as to the form in which statistics should be presented. Therefore, I want to know whether there is anything that we are not capable of doing which this new body could do?—Of course, one reply might be that what is contemplated in setting up a new body to revise statistics, or co-ordinate them, is that it should be as permanent as any existing Department. A Select Committee of the House of Commons is not in its nature permanent, and certainly not in its personnel.

Mr. Lehmann.—Might I suggest another reason—that the Committee's advice really comes in after the thing has been prepared and printed, and it is only submitted to us in that form?—Yes.

Whereas I presume your Board of Inspection or Supervisors, or Statistical Department, would have the matter before it was printed?—Certainly. If there was, as suggested by the Census Committee, a consultative committee with regard to all official statistics, consisting primarily of the officers responsible for them, no doubt mutual help might be given. The Committee will assume that everybody concerned is desirous of securing economy as well as of putting the information forward in the best way, though they might not succeed in the best way. A body which consisted only of officers mainly responsible for the preparation of Government statistics could, I think, be of considerable assistance.

Chairman.—What are the objects which you think it is desirable to obtain?—I should like to say that so far as the defects of official statistics are concerned, I do not propose to offer evidence. I am in the position of an incriminated person, so any criticism of that sort I should desire to leave to others; but I think everyone agrees that it is desirable, if possible, to obtain greater co-ordination of the returns published by the various Departments in each of the three kingdoms, and also desirable to get greater condensation of details in some cases.

Mr. Harold Cox.—What exactly does "greater co-ordination" mean? Is it not possible that returns are wanted for a particular purpose in Ireland, and wanted for a different purpose in Scotland, and that the problem is different, and is looked at with different eyes, and therefore cannot be solved by the same means?—No doubt that must be so in many cases.

Therefore, your co-ordination might really do more harm than good, if you mean by co-ordination reducing to a uniform standard? —Then, in such cases, it would not be desirable to attempt to make great uniformity. I am not speaking of precise uniformity between the three countries.

Chairman.—Do you know anything about the Registrar-General's returns of births and deaths in England, Scotland, and Ireland?—I know them, of course. I have seen them, that is to say, but I am not prepared to make any detailed observations upon them.

Do you know that the ages for which the statistics are prepared are not similar in the three kingdoms, and therefore the statistics for the three kingdoms cannot be compared?—If that were so, that is the sort of way in which I think it might be desirable to get uniformity, subject, of course, to any considerations there may be. I cannot think at the moment of any considerations which would prevent uniformity on such a point as that.

Mr. Harold Cox.—But is it necessary to create a new Department in order to get uniformity in births and deaths statistics?—Certainly not, if that is the only point. I am not suggesting the establishment of a new Department. I am only saying that is one of the general things which is commonly said—namely, that greater co-ordination is desirable between the three countries, and I think there is something to be said for it.

I do not take you as suggesting a Department, but that suggestion has been put before us?—Yes.

Chairman.—Your second point was greater condensation in detail?—I think if there was a consultative committee as I have suggested it might probably effect that in some cases, while I also think in other cases it might be desirable to get more explanation and more elucidation of the returns.

Have you any other point?—Then there is the point already brought up with regard to the supervision of Parliamentary and occasional returns, including statistics published by Committees and Commissions not connected with a Department, and that is separated, if I remember rightly, in the Report of the Official Statistics Committee itself, from those of Departments primarily responsible. Another point which has been urged is that it is thought that greater promptitude, which is desirable, might be secured in the issue of certain returns.

Mr. Harold Cox.—What makes you think that?—I am not prepared to cite a case in which greater promptitude is possible without inquiry, but it certainly has been a ground of complaint.

It was referred to in Sir Charles Dilke's address that some returns ought to, and could be, issued with greater promptitude.

But surely you do not contend that you get greater promptitude by requiring a Department first of all to prepare its return and then to consult this central Department. On the face of it you get more promptitude by leaving the Department a free hand in preparing its own returns than by it consulting anybody else?—Anything like a central Department would not necessarily lead to greater promptitude.

But rather the other way?—I agree. In fact, broadly speaking, I consider this country will compare favourably with any country in the promptitude with which returns are issued. It is not a question upon which I personally think any serious general complaint is well founded.

Chairman.—Do you think the Census Returns are issued with sufficient promptitude?—I would not say with sufficient promptitude, because all who want to get them would like to get them much earlier. I think they are issued with as great promptitude as the conditions under which they are prepared admit, and I think it would mean greater promptitude if a permanent census office were established, as recommended by the Society; but that is another matter.

Have you anything further to add?—I do not know that I need add much more. I was proposing to say that although there has been—and I have drawn attention to it through the proceedings of the Society—a good deal of destructive criticism, the constructive criticism so far has been rather vague. So far as regards the suggestion, which has certainly been made occasionally, that official statistics should be prepared in one central office with one general staff under the control of one statistician, I do not myself think that it is practicable, and if it were practicable I do not think it would be desirable. I think it is of the greatest importance that statistics should not be dissociated from administration. There are a large number of cases where statistics are collected largely as incidental to administration, and there I think it is desirable that the control and preparation of those statistics should remain with those responsible for the administration.

Mr. Harold Cox.—Because they know the form they want?—Because they know the form they want. In fact, I think it is most desirable that official statistics should be practical, and those responsible for them should be in close touch with the facts that the statistics record. Official statistics are only records of economic and social facts in numerical form, and their collection and publication involve much which lies outside the training of a statistician as such. In point of fact official statistical work comprises, I think, five stages; first, the arrangement of the system and the organisation of the machinery of collection; then the drawing up of a schedule or questionnaire; then the tabulation and analysis of the returns; then the explanatory and elucidatory comments on the returns; and, lastly, the form in which they should be published.

Have not you rather left out of that category the question of verifying the returns, which is rather important?—I take it that is included in the tabulation and analysis of the returns.

Is analysis the same thing as verification?—It ought to a large extent to result in verification.

It is only a little scepticism in my mind as to whether the original facts are facts, or are fictions?—Of course, if you use statistical methods you ought to be able to find out to a very large extent the errors in the returns, provided you know how they have been collected. The essential thing is that you know exactly the conditions under which they have been collected.

You finally depend on your informant?—You finally depend on your informant, and, of course, it is only those who have been responsible for the machinery by which they have been collected who can really judge of the validity of the results at the end. The important point is the absence of bias to begin with. It is not completeness that you want necessarily in getting a set of facts. That is perhaps too broad a way of saying it, because it depends upon what the facts are. If you are enumerating the population, you want completeness; but in a large number of cases you do not want absolute completeness. In one of the oldest returns—the corn return—there is no attempt to get completeness. For the purpose for which you get the returns you do not want to know all the corn sold, but only a sufficient sample to arrive at the price, and all you have to satisfy yourself is that the system by which you collect the information is such that you remove any probability of bias in either direction.

Mr. Lehmann.—That is to say, a great deal depends upon the questionnaire—the form in which you put it?—I think the knowledge which is necessary for drawing up that form is a knowledge primarily of the conditions of the industry or the section of the community from which you are asking information.

Mr. Harold Cox.—What you have been just saying rather strengthens your proposition that administration and collection of statistics must go hand in hand?—Yes, I think that very strongly, and for that reason, therefore, any proposal to take it out of the hands of the Departments concerned with the administration, and assumed to possess some knowledge of the classes from whom they are attempting to collect returns, would be exceedingly undesirable. Of course, it might conceivably be that a central statistical bureau, or commission, or big office might have not only trained statisticians, but also experts on every conceivable subject; but that would be a very wasteful way of doing it. If then it is impracticable, and, even if practicable, undesirable, to centralise all official statistics in one department, the question is: What can be done to remedy or mitigate present defects?

Mr. William Redmond.—Have you any knowledge of the collection of statistics in the Departments having reference to statistics in other countries and in the Colonies?—I have some general knowledge, and I was going to say that it seems to me it is rather premature to attempt anything like a definite scheme. I am certainly not prepared to suggest anything definite or define any absolute plan, and really what is most desirable is that, if the subject is to be dealt with at all, further investigation should take place, and in that investigation I should give the primary place to an inquiry into the methods and systems adopted in other countries. That was not attempted by the Official Statistics Committee, but in point of fact they did have before them a report which was prepared by Dr. von Mayr, summarising the arrangements in most of the different countries. I have already referred to the address of Mr. Martin before the Royal Statistical Society in which he also made a sort of summary of the arrangements existing in other countries, many of which have central statistical bureaus or commissions.

That is the reason why I asked whether you would like to give any reason for your statement that it was impracticable, in view of the fact that it does exist in other countries?—But then we have been collecting statistics on a somewhat elaborate scale, I think I might say longer than most countries, and here you have machinery which has grown up. You have also Departments which are charged by Parliament by Statute with the duty of collecting particular returns. That is why I think it is almost impracticable under these conditions to abolish the responsibilities of the Departments for statistics. I regard it as almost impracticable from the administration point of view to do it. I have also been expressing the view that even if practicable it would not be desirable.

Mr. Harold Cox.—Differentiating between what I may call the practical use of statistics for practical purposes of administration and of legislation, and the use of statistics for the pure luxury of reading them, is not the former use almost confined to the administrative departments themselves?—No, I should hardly have thought so. I should have thought they were primarily for the information of Parliament and of persons who study economic subjects.

I want to discriminate between the "luxury use" and the practical use. The practical use is exercised surely only through the Departments. Parliament only sees through the Departments?—I do not know. I should rather demur to that definition of the "luxury use." I thought you meant the reading of statistics for the pure enjoyment of the thing, which is a faculty not everyone possesses. If you include in that the use of statistics for economic discussion, for information, and for correct knowledge of facts, I should say that is the primary use of statistics.

You think they are really used more in this country than they are used by the actual Departments for their own information?—I think so. I certainly hope so.

I ask that question because we have had so much evidence before us from different Departments, and when we put particular questions the answer has been: "The Department wants them for its own information"?—Referring to the statistics I know best, take, for example, the information as to the produce of a crop in a particular country. It seems to me that it is of the most material use to the persons interested in the growth and consumption of that crop; and its primary use, it seems to me, is to prevent the issue of erroneous statements by interested persons.

Chairman.—Your Department very largely exists in order to collect statistics for the use of the industry?—It is one of its chief functions, and I should say in an instance of that sort that is the primary use of those statistics, not only that they give due information of the crop, which, of course, is of interest for economic purposes, and is of use to Parliament, and so forth, but also because their publication by an official Department, and by a disinterested party, prevents misleading statements being issued by persons interested in under-estimating or in over-estimating the crop.

Have you any suggestions to make? You do not favour over-centralisation?—No. As I say, the only thing in the way of a definite suggestion that I should put forward, is that of the Consultative Committee which is indicated in the report of the Society. I think with regard to the report of the Census Committee, the proposal made would and might be desirable to carry out; but further than that, I think probably some useful result might be attained by a Consultative Committee having supervision, or having advisory or consultative functions, over the whole body of official statistics. I should, however, like to say, as I have already said, that before making any definite suggestions, I do think more information is required. First of all, you want any body, which was going to make definite proposals, to examine in detail what every Department does—which this committee has to a large extent done—and perhaps see all the officers concerned; and still more should it obtain a knowledge of the exact working of and advantages gained by other countries by a more centralised system. I was asked if I have any personal knowledge of the system of other countries.

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Chairman.—You seem rather to be trending to the idea that what is first required is that Departments which had collected statistics should meet together by representatives, and discuss what could be done?—Yes, I think that might be a useful step.

You do not think it would be useful for this Committee to give advice to the Departments, but rather, if we do make any recommendation, that we should recommend that they should take the step of meeting together?—Yes, I think that might possibly result in something good.

Do you think there is any urgency with regard to the census particularly?—I think the question with regard to the census is of the greatest urgency.

Do you know when the sending out of papers, and so on, is begun?—It is generally begun very much too late, because statutory powers are not given soon enough.

Mr. Pike Pease.—I understand you consider it advisable that a Consultative Committee should be appointed to meet at intervals and discuss the question of what returns should be made. Who do you think ought to be represented on that Committee?—I was thinking of a consultation between the principal Departments concerned in the publication of statistics.

All Government Departments ?—Yes, which publish statistics.

Chairman.—But your idea rather is, not that the Consultative Committee should be the body to overlook statistics, but that they should devise a plan ?—No; I was thinking in the first instance, that they might perhaps overlook their own statistics in consultation one with another, and see how far co-ordination was possible between different departments and different countries, and they might, by meeting together, be able to devise improvements.

When should the preparation for sending out the census papers take place ?—It is rather difficult for me to say exactly. The Registrar-General could best answer, but I know there has been complaint made in the past that the Act is not passed sufficiently soon to allow of the spending of money on the census in order to make arrangements in time. We have, as a Society, some months ago urged upon the Government the desirability of passing the Act at once for the census of 1911, so that steps may be taken. Matters have had to be hurried in the past in consequence of so little time being allowed before the census has to be taken.

That is a glaring instance of want of co-ordination—the fact that it is done through three Departments—England, Ireland, and Scotland. I understand that they are each separate ?—Yes, each is separate.

Mr. Pike Pease.—I understand in some of the Colonies the whole of the statistics come out of one office ?—Yes, in the Australian Colonies. I think they have now set up a Department in the whole Commonwealth, though they still retain their State Departments of statistics. I am not quite certain of the precise arrangement since the formation of the Commonwealth.

Mr. William Redmond.—Would you be in favour of having, not a Department, but a State statistician, as in Australia, to supervise and control the whole thing ?—No, I do not think I should favour that.

Mr. Harold Cox.—Can you make any suggestion to this Committee by which it could improve statistics from your point of view, because it seems to me we have been at work, more or less, in the direction of co-ordination since we have been in existence ?—No, I am not prepared to make any suggestions to this Committee. If I may be allowed to say so, I think the Committee has done useful work so far, but it is only looking at statistics and other publications from the printing point of view, if I may say so.

No, we have also gone into the question of substance in many cases, and asked whether the particular returns were necessary ?—That is to say, you have called upon the officers responsible to defend their returns.

That is so, and necessarily we have had to compare one set of returns with another—Scotch returns with English, and so on ?—Yes.

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IV.—*Agricultural Returns of Great Britain*, 1909.

PRODUCE OF CROPS. *Preliminary Statement showing the Estimated Total Produce and Yield per Acre of the Corn, Pulse, and Hay Crops in Great Britain in the Year* 1909, *with Comparisons for* 1908, *and the Average Yield per Acre of the Ten Years* 1899-1908.

	Estimated Total Produce.		Acreage.		Average Estimated Yield per Acre.		Average of the Ten Years 1899-1908
	1909.	1908.	1909.	1908.	1909.	1908.	
				WHEAT.			
	Quarters.	Quarters.	Acres	Acres.	Bushels.	Bushels	Bushels.
England	7,300,056	6,225,181	1,734.236	1,548,732	33·68	32·16	31·39
Wales	138,980	117,010	39.575	34.573	28·09	27·08	26·39
Scotland	255,822	224,701	49,681	43,428	41·19	41·39	38·86
Great Britain.	7,694,858	6,566,892	1,823,492	1,626,733	33·76	32·29	31·46
				BARLEY.			
England	6,313,562	5,617,155	1,379,133	1,383,326	36·80	32·48	32·91
Wales	340,450	324,945	85,272	86,693	31·94	29·99	31·09
Scotland	936,950	897,955	199,989	197,418	37·48	36·39	35·32
Great Britain.	7,620,962	6,840,055	1,664,394	1,667,437	36·63	32·82	33·09
				OATS.			
England	9,780,616	9,993,773	1,839,912	1,958,736	42·53	40·82	41·75
Wales	878,974	864,420	198,528	201,595	35·42	34·30	34·48
Scotland	4,737,718	4,595,211	943,412	948,513	40·18	38·76	36·60
Great Britain.	15,397,308	15,453,404	2,981,852	3,108,844	41·31	39·77	39·65
				BEANS.			
England	1,070,238	1,057,467	301,287	282,573	28·42	29·94	29·77
Wales	4,531	3,714	1,347	1,083	26·91	27·43	26·56
Scotland	42,411	44,261	9,172	9,572	36·99	36·99	34·78
Great Britain.	1,117,180	1,105,442	311,806	293,228	28·66	30·16	29·97

PRODUCE OF CROPS. *Preliminary Statement for Great Britain for* 1908—*Contd.*

PEAS.

	Estimated Total Produce.		Acreage.		Average Estimated Yield per Acre.		Average of the Ten Years 1899-1908.
	1909.	1908.	1909.	1908.	1909.	1908.	
	Quarters.	Quarters.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
England	546,064	540,404	168,673	153,086	25·90	28·24	27·39
Wales	1,934	2,094	708	746	21·86	22·46	21·53
Scotland	2,119	2,035	602	566	28·15	28·76	26·67
Great Britain.	550,117	544,533	169,983	154,398	25·89	28·21	27·35

HAY FROM CLOVER, SAINFOIN, &C.

	Tons.	Tons.			Cwts.	Cwts.	Cwts.
England	2,090,681	2,597,094	1,449,340	1,626,832	28·85	31·93	29·64
Wales	192,907	228,448	170,497	178,537	22·63	25·59	24·92
Scotland	652,589	681,242	415,990	426,984	31·38	31·91	32·30
Great Britain.	2,936,177	3,506,784	2,035,827	2,232,353	28·85	31·42	29·73

HAY FROM PERMANENT GRASS.

England	4,731,088	5,419,056	4,094,162	4,267,562	23·11	25·40	24·12
Wales	484,687	559,627	529,567	529,098	18·31	21·15	19·46
Scotland	216,585	234,672	152.965	152,290	28·32	30·82	29·72
Great Britain.	5,432,360	6,213,355	4,776,694	4,948,950	22·75	25·11	23·80

Note.—The preliminary statement of the produce of hops for 1909, issued on the 12th October, showed a total estimated produce of 214,484 cwts., being an average yield of 6·59 cwts. per acre.

The preliminary statement of the produce and yield per acre of potatoes and roots in 1909 will be issued shortly.

BOARD OF AGRICULTURE AND FISHERIES,
3, St. James's Square, S.W.,
10th November, 1909.

NOTES ON ECONOMIC AND STATISTICAL WORKS.

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1.—*La Société de Statistique de Paris. Notes sur Paris. (A l'occasion du Cinquantenaire de la Société et de la XII^e Session de l'Institut international de Statistique.)* 1909. lxvi + 220 pp.

Every member of the International Statistical Institute who was fortunate enough to attend the meeting at Paris will gratefully appreciate the happy thought which led the Statistical Society of Paris, founded in 1860, to celebrate its jubilee some few months in advance of the proper date and to take the opportunity thus offered of inviting foreign statisticians to its festivities. Of these, a brief account will be found in the last issue of this *Journal.* The volume now under notice, issued in commemoration of the jubilee and presented to members of the Institute, happily combines the two purposes which it was intended to serve—a memorial of the Society and a brief survey of the material, administrative and intellectual life of Paris for the information of its guests.

The latter part is a remarkable collection of short monographs, at once concise, readable and informing. It was at first decided, M. de Foville tells us in his introduction, to limit each monograph to four pages: six were allowed to those who demanded twenty, eight to those who wanted a hundred. "That is what we call contenting everybody!" But the result is certainly worthy of the effort that it must have cost, and the volume should be read by everyone who desires to obtain, in small compass, an acquaintance with the varied aspects of the life and administration of Paris. It is impossible to do justice in these pages to a volume covering so wide a field, but a list of the monographs and their authors will do more than any description to show the scope and value of the book. The introduction, as already mentioned, is by M. de Foville, and the following articles include "Climat, topographie, ethnographie," by M. le Dr. Chervin; "La population," by M. Jacques Bertillon; "Les étrangers à Paris," by M. Michel Huber; "La physionomie de Paris et les monuments," by M. Gustave Schelle; "Les maisons," by M. Albert Fontaine; "Les promenades parisiennes," by M. Paul Meuriot; "Les environs de Paris," by M. Paul Matrat; "Le sous-sol parisien," by M. Octave Keller; "Les eaux et l'éclairage," by M. Gaston Cadoux; "Les moyens de transport," by M. A. Barriol; "L'automobilisme," by M. F. Hennequin; "Le port de Paris," by M. Yves Guyot; "Abattoirs et marchés," by M. E. Fléchey; "La consommation du tabac," by M. M. Malzac; "La petite industrie," by M. Ch.-M. Limousin; "La bourse," by M. Alfred Neymarck; "L'or et l'argent," by M. A. de Foville; "L'épargne et la prévoyance populaires," by M. Albert Delatour; "L'assistance publique," by M. E. Cheysson; "L'administration et la police," by M. E. Desroys du Roure; "Les tribunaux," by M. Maurice Yvernès; "L'enseignement," by M. E. Levasseur; "Les établissements scientifiques," by M. E. Levasseur; "Musées et expositions," by M. Eugene d'Eichtal; "L'art decoratif," by M. Arthur Fontaine; "La mode," by M. Raphael-Georges Levy; "Théatres et concerts," by M. G. Payelle.

The first part of the volume consists of two articles only—"Les précurseurs," by M. Fernand Faure, and "1860-1910," by M. Lucien March. The article by M. Faure is a contribution of high and permanent value to the history of statistics. He rightly remarks that from any of the existing histories of statistics—German, Italian, or even French—the reader would receive the impression that until the middle of the eighteenth century France contributed little to the development of statistics, and that her writers of that period were inspired by the authors of other countries, mainly those of the English school. "This is a great error. There were by no means few French writers who perfectly understood the utility of statistics, proclaimed it, and compelled others to admit it, long before they were affected by English or German doctrines. There exists a purely French conception of statistics. There is a real national doctrine on the *rôle* and the employment of statistics; the doctrine was spontaneously elaborated in our own country, and forms a distinct and vigorous branch of the political theories which sprung into being towards the close of the sixteenth century." To illustrate this theme and to recall the names of some of the illustrious dead who have been unjustly forgotten is the purpose of M. Faure. He takes six writers of the front rank who lived prior to the middle-eighteenth century: Jean Bodin, author of "Les six livres de la République" (1577); de Montchrétien, author of the "Traité d'économie politique" (1615), who, according to M. Faure, reproduced, often textually, passages from Bodin; Fénelon, who gives in "Les aventures de Télémaque" a regular programme for a statistical survey (a "statistique générale"—the term seems hardly translateable), and enforces, in his "Directions pour la conscience d'un roi," the necessity of a census with the ironical question, "What would be thought of a shepherd who did not know the numbers of his flock?";

the Abbé de Dangeau, who left voluminous manuscripts with statistical data; Vauban, the only writer of these six whose name is well known in the history of statistics; the Abbé de Saint Pierre, who wrote, *inter alia*, a memoir, "Sur l'utilité des dénombrements"; and, finally, the Marquis d'Argenson, who expressed very clearly, in a work written in 1720, though not published till 1784, his belief in the necessity of periodical enumerations. After this date the literature becomes more extensive, and we must refer the reader who is interested in the subject, to the original, in which the history is carried down to 1860 when the *Société de Statistique de Paris* was founded with M. Villermé as Honorary President, and Michel Chevalier as President. Space does not permit us to follow its history as recorded by M. March, but we may note the definition of its aims: "Mettre en honneur les recherches statistiques et les populariser, afin de faciliter les enquêtes administratives en éclairant les masses sur l'utilité de ces enquêtes, en les disposant à les accueillir comme des mesures essentiellement favorables à leurs intérêts." We cannot refrain from citing in conclusion one short passage from M. March which shows that the Society possesses one advantage that does not fall to the lot of its sister on this side of the Channel: "In recognition of the services rendered to the Administration and of its educational work, the Statistical Society receives subventions from several Ministerial Departments, from the Conseil Général de la Seine, and from the Conseil Municipal de Paris." May the *Société de Statistique de Paris* live long and prosper!

2.—*Census of production* (1907). *Preliminary tables summarising the results of the returns received under the Census of Production Act*, 1906, Part i. (Cd–4896.) 37 pp. Price 4*d*. 1909.

This is the first instalment of a series of preliminary reports summarising, for the more important trades of the country, the preliminary results of the returns received under the Census of Production Act, 1906, (a reprint of which will be found in vol. 70 of the Society's *Journal*, p. 83). Further parts will, it is hoped, be issued at short intervals. The present tables relate to mines under the Coal Mines Regulation Acts, coke works and shale oil works in connection with such mines, and factories in the cotton trade, woollen and worsted trades, certain branches of the iron and steel trades, and the tin-plate trade. In the textile trades only returns relating to spinning, doubling, weaving and their subsidiary processes have been tabulated: bleaching, dyeing, printing, and finishing are only included in so far as they are done by, or on commission for, spinners and weavers. The table below, extracted from the Report by the Director of the Census, summarises very briefly the data as to value of output, &c., for these trades. The year to which the returns relate is, in general, the calendar year 1907, although in certain instances where the financial year of a firm was not coincident with the calendar year, such firm has been permitted to furnish particulars for a period of twelve months ending not earlier than 30th June, 1907, nor later than 30th June, 1908.

	1	2	3	4	5	6
	Gross output. Selling value.	Materials used. Cost.	Work given out. Amount paid to other firms.	Net output. Excess of column 1 over columns 2 and 3.	Persons employed. Total.	Net output per person employed.
	Thousand £'s.	Thousand £'s.	Thousand £'s.	Thousand £'s.		£
Mines under the Coal Mines Regulation Acts	123,245	16,881	—	106,364	840,280	129
Coke works	10,141	7,148	—	2,993	10,944	
Shale oil works	2,371	1,594	—	777	3,391	
Cotton factories	176,940	129,095	904	46,941	572,869	82
Woollen and worsted factories	70,331	49,241	1,638	19,452	257,017	76
Tinplate factories	9,350	7,203	—	2,147	21,222	101
Iron and steel factories (smelting, founding, and rolling)	105,597	74,049	600	30,948	262,225	118
Total	497,975	285,211	3,142	209,622	1,967,948	—

In the more detailed tables, data are given as to quantities as well as values. In the case of coal, these data are of special interest, inasmuch as, in the first place, the total can be checked against the figures given by the Home Office reports, and some evidence is thus afforded of the trustworthiness of the Census of Production returns, and in the second place they enable a classification of the output to be given, for the first time, under the headings used for exported coal. The total output (1907) amounts to 265·1 million tons, a quantity less than that returned to the Home Office by about 1 per cent. This difference can, it is believed, be accounted for mainly by the exclusion from the returns to the Census of Production Office of a certain quantity of unsaleable coal. Of the 265,000,000 tons, in round numbers, 4,000,000 were anthracite, 126,000,000 steam coal, 29,000,000 gas coal, 53,000,000 household coal, and 52,000,000 "other sorts," including a certain amount of unclassified coal. Steam coal forms rather less than half the total and household coal about one-fifth.

The requirement of the Act (Section 6 (3)) that the Board of Trade shall not arrange any particulars "in any way which would enable any person to identify any particulars so published as being particulars relating to any individual person or business," though no doubt necessary, seems to work with rather unexpected stringency. In quite a number of cases it results that totals can only be given for the United Kingdom as a whole, the columns for England and Wales, Scotland and Ireland being left blank.

The Board of Trade are to be congratulated on the prompt issue of this instalment of a preliminary report, the following instalments of which will be awaited with great interest. In such further instalments the prefatory Report by the Director might perhaps be somewhat amplified; the present Report is a little curtly written and in places not easy to follow.

3.—*Earnings and Hours Inquiry. Report . . . by the Board of Trade into the Earnings and Hours of Labour of Workpeople of the United Kingdom.* II. *Clothing Trades in* 1906. [Cd-4844 of 1909.] lxvi + 237 pp. Price 2*s.* 5*d.* 1909.

The second volume of the Board of Trade Inquiry into earnings and hours of labour is devoted to the clothing trades; and it is in some ways more interesting and important than the first volume. The textile trades have for so long been under official inspection, and subject to statistical investigation, that in their case the object of the inquiry was merely to obtain a more detailed statistical survey in regard to wages and hours of labour than had been yet attempted, to make a comparison with the rates of wages ascertained in the inquiry of 1886, and to put a check upon deductions made from the changes in rates of wages which the Board of Trade had since then recorded. In collecting statistics of the clothing trades, however, the department have broken fresh ground, for hitherto there has been no systematic investigation of these trades. The returns obtained in the inquiry of 1886 were so few that they could not be regarded as representative. Even in this inquiry of 1906 the returns obtained cover only 226,000 wage-earners out of 789,000 known to be employed in factories and workshops, or 29 per cent.; and no information whatever was obtained as regards the 700,000 home workers following these trades.

The volume under notice contains first a general report, summarising the statistical information obtained for the clothing trades as a whole, and this is followed by detailed reports of the various trades. The range of the inquiry in regard to the trades investigated, and the general results, so far as they can be conveyed by averages, may be gathered from the table on the following page.

In the detailed reports there is much useful information of a descriptive character in regard to the methods, processes, organisation and customary practices prevalent in the different trades. The facts here presented will be particularly valuable to social workers anxious to improve the conditions under which girls and women labour in clothing workshops; whilst economists and sociologists will find here in convenient form descriptive matter of the greatest interest, which it would be impossible to collect from existing publications.

Following the reports are summary tables, in which the average earnings, numbers of workers, and hours of labour, in the trades as a whole, and separately, are exhibited in various ways. The bulk of the volume, however, is occupied by the detailed tables, which present the statistics of all the trades, separately for workshops and factories in the dressmaking and millinery group, and for laundries; and separately for the "bespoke" and ready-made trades in tailoring and bootmaking. The rapid growth of the

[In comparing the wages of men and women see warning in the text below.]

Industry.	Number working *full time* in last pay week of September, 1906.		Average earnings of workpeople who worked *full time* in the last pay week of September, 1906.*					Minimum and maximum numbers expressed as percentages of the average number.	
	Men over 20.	Women over 18.	Men.	Lads and boys.	Women.	Girls.	All workpeople.	Minimum.	Maximum.
Clothing trades—			s. d.	s. d.	s. d.	s. d.	s. d.		
Dress, millinery, &c. (workshop)†	98	25,921	50 11	7 5	13 10	3 9	11 2	80	111
„ (factory)	558	5,803	31 8	9 11	15 5	6 4	14 10	93	106
Skirt, blouse, underclothing, &c.	1,801	22,339	29 10	8 9	13 4	6 9	12 8	99	101
Tailoring (bespoke)	7,010	4,245	33 6	6 11	14 2	5 5	22 1	94	108
„ (ready made)	3,411	11,372	31 11	9 9	12 11	6 6	14 8	99	102
Boot and shoe (ready made)	13,621	6,275	28 8	10 6	13 1	6 10	19 5	99	101
Boot, shoe and clog making (bespoke and repairing)	1,985	56	27 3	8 3	12 6	6 11	22 11	99	102
Silk and felt hat	1,352	1,135	34 3	12 7	16 4	7 8	22 1	98	103
Leather glove	779	767	29 7	7 7	12 1	5 11	16 8	93	102
Corset (factory)	307	2,735	28 11	10 4	12 2	6 3	12 5	96	102
Fur	353	587	35 7	10 6	16 7	7 2	20 10	93	105
Straw hat and bonnet*	263	686	36 7	10 1	19 10	11 2	22 8	88	113
Other clothing	340	1,984	30 3	11 4	12 11	6 2	13 6	98	102
Dyeing and cleaning	1,576	2,360	29 6	10 7	13 10	7 2	17 7	95	104
Laundry (factory)	2,662	15,452	26 2	8 9	12 10	6 6	13 0	97	103
„ (workshop)	224	2,616	22 6	9 4	12 9	6 7	12 7	99	103
Average, all above industries			30 2	9 8	13 6	5 9	15 1		

* For the straw hat and bonnet industry the earnings stated are for a representative week in the season.

† Exclusive of all unpaid apprentices or learners, and of workpeople receiving board and lodging or partial board in addition to wages.

factory system in the boot and shoe trade is instanced by the increase of the numbers employed in such factories from 49,000 to 102,500 in the five years from 1889 to 1904; and although the returns here presented relate to only 38,582, or 38 per cent., of the persons employed in the ready-made boot and shoe trade, they are of great value as the first statistical survey of what has now become an important industry. Information is given as to earnings in this, as in the other trades, both by averages, for each grade of worker in each district, with medians and quartiles, and by group tabulation of numbers in one-shilling and five-shilling groups.

The statistics furnished in the detailed tables may prove of much service in connection with the very difficult question of establishing wages boards and a legal minimum rate of wage in underpaid trades. It shocks one to find that in the dressmaking and millinery trade there are some 8,000 women (of 18 years and upwards) working full time (usually 48 to 56 hours per week) for *less than* 10*s.* per week; and in the manufacture of shirts, blouses, underclothing, &c., nearly 5,000, the wages in both being without any sort of supplement in kind, whilst learners are excluded. In the latter industry there were 188 men (of 20 years and over) earning less than 18*s.* per week.

It must be borne in mind that all these figures refer only to workers in factories and workshops. It is most unfortunate that the Board of Trade did not find it possible to extend their inquiry to outworkers. In the general report is the remark that it was "understood by the Department that in the majority of cases the employer would be unable to state the number of workpeople who might be employed on work given out by him to outworkers. The information asked for by schedule as to outworkers was accordingly limited to a statement of the aggregate amount paid by the employer during one week of each month, so as to show the seasonal fluctuation during the whole year." But even the meagre information thus obtained does not appear to be published anywhere in this volume, for all the tables are expressly limited to persons employed on the employers' premises. Surely it would have been possible to obtain some definite information in regard to the earnings of outworkers? A separate schedule for outworkers could have been sent to be filled in by those employers willing to take the trouble. With each parcel of material given out during a certain week they might have been asked to send a form which the person taking the work would have been required to return filled up when calling for payment. On the form would have been entered (1) the total amount of money received for work on the parcel, with particulars of deductions; (2) number of different persons employed on the parcel; (3) the number of hours each person, or all the persons, worked on the parcel; (4) the payments made for work on this parcel by the receiver of it to each of the persons employed by her; (5) cost of any materials, and of heat and light, required for the work on this parcel only.

It may have been thought that any such investigation would have been impracticable with the resources at the command of the Department; but even if many paid investigators had had to be employed for a few weeks to explain to receivers of parcels what was wanted on the forms, and if the information obtained was in regard to not more than some twenty or thirty thousand outworkers, it would have been well worth the trouble and expense of organisation. In every town there are many well-educated social workers of both sexes who would gladly render such service for a few days for little or no remuneration.

A very interesting feature of the inquiry is the information collected in regard to the seasonal fluctuations of various trades. Particulars were obtained for one normal week in each month of the total amount paid in wages, and of the total number of persons receiving wages. The results are exhibited in tables, of which the following few lines may be taken as a specimen:—

Month.	Dress, millinery, &c.				Laundries (workshop).	
	Northern Counties, Cleveland.		London.		Yorkshire, Lancashire and Cheshire.	London.
	Numbers of work-people.	Total wages.	Numbers of work-people.	Total wages.	Numbers of work-people.	Numbers of work-people.
January	87·2	88·6	92·3	87·8	97·6	100·9
February	85·1	89·6	96·5	93·2	97·9	101·2
March	97·7	98 0	107·0	107·7	97·4	101·0
April	107·9	108·4	110·0	112·4	99·5	101·0
May	111·2	113·6	111·6	113·2	101·4	101·9
June	112·4	110·1	108·2	108·8	103·2	102·9
July	105·6	106·6	96·1	97·9	103·1	101·7
August	89·9	91·9	68·1	66·0	102·8	96·5
September	99·4	99·7	102·3	102·7	101·1	96·3
October	104·4	103 1	108·6	111·5	98·9	98·4
November	102·5	100·8	102·6	102·2	97·7	98·8
December	96·7	89 6	96·7	96·6	99·4	99·4

The dress and millinery trades, especially in workshops, show the greatest seasonal fluctuations, whilst the fur and the "bespoke" tailoring trades come next. There is comparatively little seasonal fluctuation in the manufacture of boots and of underclothing, &c. The minimum and maximum numbers employed, expressed as percentages of the average number to whom wages were paid, is given in the last two columns of our first table above. In studying these figures, however, it must be borne in mind that no considerable fluctuation of numbers employed is to be expected in factories and workshops, which the employer naturally endeavours to keep fully occupied. It is the unfortunate outworkers, of whom we have no particulars, who are on the margin of the labour supply, and who suffer most from violent seasonal fluctuations.

One or two criticisms of the whole inquiry suggest themselves. Whatever may be the conventional, the sociological, or the official ages at which persons become adult—why, for purely statistical purposes, should boys become men at 20, the girls women at 18? —the years between 18 and 20 are a part of the time of life when earnings advance most rapidly, so that for the purpose of comparison between the earnings of the sexes, the averages for men and women, boys and girls, are most misleading. By this inequality of age-grouping the ratio of male to female earnings is given a fictitious increase, both for young persons and adults; to what extent, it is impossible to ascertain. Thus is the public misled!

Presumably the inquiry was made in 1906, in order that the interval since the first of the kind should be 20 years. It would have been better in many ways had the recent inquiry been made to synchronise with the first Census of Production. This, however, would not have got over the difficulty that 1886 was a year of depression, whilst 1906 and 1907 were years of boom, the collapse beginning in the latter year. To measure progress it is indispensable that any industrial inquiry or census of production should be made in corresponding years in successive cycles of trade. Unless the world's harvests next year are below the average, we may look for the next boom to begin in 1913; and as that year would then correspond with 1906, the Board of Trade might well prepare for taking the next inquiry in 1913. The year preceding that in which the collapse begins is probably about the best both for such an inquiry and for a census of production; but it would be better still if an inquiry could be made twice in every trade cycle, once in the midst of depression, and again just before the height of activity is reached.

Notwithstanding these critical suggestions, I am fully alive to the immense importance of the work, carefully and conscientiously done, which is embodied in this volume. Such investigations entail much thought and vast labour. It would be surprising, indeed, if criticism were not forthcoming when such comprehensive surveys are in their infancy. Criticism is offered not to decry, but to assist. *Qui non proficit, deficit.* H.S.J.

4.—*A century of population growth*, 1790-1900. 303 pp., 4to. Government Printing Office, Washington, U.S.A., 1909.

The Bureau of the Census have presented, in this report on the first census of the United States, some studies of very considerable interest to others than the citizens of the great republic itself. The comparatively meagre information contained in the schedules of the census has been presented in such relations to the results of subsequent enumerations as to throw very instructive light on several important aspects of the development of the country. Earlier partial censuses have also been discussed briefly, so that a convenient work of reference on the subject of the growth and distribution of the white population of the United States for nearly three centuries results. Attention may be confined in this notice to a few of the more salient points brought out in the course of the discussion of the data.

The total population in 1790 shown by the returns and estimated for returns not preserved was 3,929,625, of whom 3,172,444 were white. In 1900 the enumerated population of the continental United States was 75,994,575, of whom 66,809,196 were white. The comparative steadiness in the rate of growth of the total population for two centuries down to 1860 is a remarkable result of the historical survey referred to above, the rate of increase per decade fluctuating about 35 per cent. throughout this long period. It is of the white population that the greater part of the report treats. It is estimated that the part of the white population of 1900 which the country owed to the immigration of the nineteenth century was about 32,000,000, the remaining 35,000,000 representing the growth of the original stock. Of that original stock, 82 per cent. were English, and 91 per cent. of British origin, including under this designation English, Scottish, and Irish. Thus nearly 32,000,000, or but little less than half of the white population in 1900 are estimated to be assignable to the British stock of a century earlier. The total British contribution to the United States population is not computed.

A notable point brought out is that the southern states, practically without immigration, have increased in white population about equally rapidly with the entire area. Thus natural increase has enabled a growth there as rapid as natural increase and immigration together have yielded elsewhere. The proportion of persons under 16 to other elements in the population emphasises this contrast. In 1790 those under 16 formed all but half the population. In 1900 they were little over a third of the population of the area for which the 1790 enumeration was made, but in the southern states they still formed 40 per cent. of the total. In 1790 there were 78 persons over 20 years of age to each 100 under 16. In 1900 the ratio was 158 to 100. There were 190 females of 16 years of age and over to 100 children under 16 in 1790, but in 1900 there was an equality between these two groups in the area of the 1790 enumeration. In the southern states, meanwhile, the proportion had fallen from 200 to 130 females of 16 and over for every 100 children under 16. These broad contrasts are emphasised when the details for each state are examined. The consequences of this change in the proportion of children to adults are discussed briefly in the report. The reduction in the size of families is shown diagrammatically, the family of four, five or six persons occurring most frequently in 1790, while in 1900, families of three persons were recorded more often than those of any other number.

It will be of interest to state that the basis of the classification by nationalities in 1790, referred to above, is afforded by the surnames of the population, not by any statement in response to questions in the schedule. Some further discussion of the distribution, varieties, and origin of the surnames recorded is included in the report.

The limits of a book notice do not permit of a discussion of the problem of interstate migration, of the numbers and distribution of slaves, of property owned and occupations followed, which form the topics of chapters in the volume, but it should be stated that a chapter is devoted to a description of the general condition of the country in 1790, its industries and trade, its means of communication, and an enumeration of the newspapers and periodicals then existing. A number of interesting old maps and other charts and diagrams add substantially to the value of the volume. A.W.F.

5.—*Industrial Insurance in the United States.* By Charles Richmond Henderson. viii + 429 pp., 8vo. Chicago: The University Press. London: Unwin. Price 9*s.* net.

This volume is substantially an English version of a contribution in German by the author to Dr. Zacher's work on industrial insurance in foreign countries, published in Berlin in 1907. To this Mr. Henderson has added considerable new material, and a summary of European laws on industrial insurance, mainly derived from the reports of the congresses on social insurances held at Vienna and Rome. Of England the author remarks that it "has long resisted the Continental tendency to make insurance compulsory, and can hardly be counted among the nations which have a full legal insurance system. Recent legislation, however, indicates that Parliament is learning its lesson." He refers to the new principle embodied in the Workmen's Compensation Acts of 1897, 1900 and 1906, and to the Old Age Pensions Act of 1908, in proof of this. He considers the scheme of the Compensation Acts to be "not yet squarely on an insurance basis," and remarks that "sickness due to other than occupational causes must be insured in other ways; there is no legal organisation yet for this purpose." It has, however, been publicly announced that the Government have in view a system of national contributory insurance against invalidity and old age, and an association has recently been formed to advocate a measure of this kind.

With regard to the United States, Mr. Henderson states that America has no system of industrial insurance, but that a beginning has been made from various starting points. There are numerous local mutual benefit societies, and he considers that the State might well adopt these into a great and powerful system covering the land, while leaving to them the advantages of self-government. The benefit features of the Trade Unions, so far as recorded, affect a million and a half of their members, and amounted in the year 1905 to 300,000*l.*; but this is an insufficient estimate. "Up to this time the Trade Unions are the only organisations which have shown ability, even in moderate measure, to provide unemployment insurance." With the exception of some societies formed among clerks, the fact is the same in this country. The "fraternal societies," which correspond to our affiliated orders, but are by no means confined to the wage-earning classes, appear to have about 5,000,000 members. Employers' liability is largely met by insurance. Industrial insurance companies and casualty insurance companies are competitors for business. Mr. Henderson also furnishes particulars of the schemes of private employers and railway corporations for the insurance of their employees, and of the municipal pension systems and the arrangements for pensioning teachers in public schools. In respect of all those matters there are differences of legislation and of practice among the States of the Union that make it difficult to generalise the information obtained.

The Federal Government is, however, a distributor of pensions on a large scale, and Mr. Henderson considers that the costly errors which were committed in the foundation and administration of the federal pension system will be instructive in relation to workingmen's insurance, and will warn the future legislator to prepare carefully and scientifically in advance a consistent and reasonable plan. He also thinks that the pension idea itself, in spite of faults of law and administration, has already prepared the way for insurance of old age for wage-earners.

The author also briefly surveys the legislation in the several States relating to the protection of adult workmen, to the employment of women, to child labour, and to work in factories, and concludes with a general survey and outlook upon the various methods of provision for the casualties of life that exist.

His book contains much statistical information, and a useful bibliography of works relating to insurance of various kinds in the United States, with the text of several statutes and model forms of rules. While primarily intended for, and adapted to the use of, the persons interested in industrial insurance in the United States, it should be studied by Englishmen also, inasmuch as the several systems of insurance which exist there have grown up upon principles of individualism and of voluntary and localised action which are even more thorough (if that be possible) than those upon which our own similar institutions have been founded. It is an instructive and authoritative work, and the University of Chicago is to be congratulated on this addition to its copyright issues. E.B.

6.—*State insurance: a social and industrial need.* By Frank W. Lewis. 233 pp., 12mo. London: Constable and Co. Boston and New York: Houghton Mifflin Co., 1909. Price 5*s.* net.

This volume is a further evidence of the earnestness with which the question of industrial insurance is being studied in all civilized countries. Mr. Lewis dates his preface from Boston, but he gives no indication of any professional or other ground upon which his claim to write with authority upon the subject is based, and we regret to say we are unable to supply the omission from any knowledge of our own. The book is left, therefore, to speak for itself, and the numerous footnotes indicate that it is the result of much reading. It also embodies deep thinking and sound reasoning, lucidly and even eloquently expressed. The author states its main purpose in the modest form that it is to "tend to stimulate interest and discussion concerning a question of profound and earnest importance." He submits the problem in the following words, which are reprinted on the opening page. "It happens, as though through some inadvertence, that in making a contract of the greatest possible moment both parties seem to ignore absolutely certain very important elements. The contract is made as though sickness, accidents, invalidity and old age had been permanently banished from the earth. The daily wage is sufficient only for daily necessities; a man entitled to support for a lifetime unwittingly consents to a wage based upon a portion of that lifetime; for the competition in the field of labour is among the strong, the able-bodied, the efficient; the sick, the maimed, the superannuated are necessarily excluded." This statement of the problem shows the weakness of arguments in favour of State intervention by way of relief of the persons who have entered into these improvident contracts. If a man who is free to bargain sells his labour at a price less than that to which he is "entitled," why should he call on others to make up the deficiency? If he does it "unwittingly," that might be ground for an equitable revision of the contract, but not for an appeal to third parties to supplement it. The theory that the reward of labour cannot in the nature of things be enough to insure the independence of the labourer is not satisfactory.

Mr. Lewis proceeds to discuss the functions of the State, and includes among them the right to compel the insurance of those whose economic insecurity not only indicates industrial injustice, but constitutes a constant menace to society. He accordingly advocates the establishment of universal State insurance for workmen, and supports his argument by a description of the German system. With regard to accident insurance and workmen's compensation for injuries, he shows that the United States are much behind Great Britain, and that this country is much behind Germany. He then passes in review the existing voluntary institutions, and finds that they are alike unsatisfactory and insufficient, and that the enlightened State is ready for something better.

The conclusion at which Mr. Lewis arrives on the question of the incidence of the burden of insurance is eminently sound. He rejects the threefold division of the German system. He considers that the State should not be looked upon as a bounteous and indiscriminate giver, and that the employer should not have the credit of supposed benefactions which are merely apparent; and he holds, therefore, that the cost of workmen's insurance should fall upon workmen, and should directly come out of their wages, a plan which would necessarily lead to a readjustment of wages wherever inadequate.

Great Britain, by her Old Age Pension Act, "has embarked upon an uncharted sea." "She has made a colossal blunder, of which the financial cost will be almost negligible compared with the serious economic consequences. The return to sane legislation will be slow and painful." Mr. Lewis rejects as unscientific and, in the broadest sense, impracticable, the schemes outlined in recent legislation, and defines in a single sentence the fundamental principle to be applied to future projects. "They must be contributory, and they cannot be made effectually contributory without compulsion." In conclusion, he suggests the lines upon which a practical scheme for workmen's insurance should be passed for a State like Massachusetts.

In an appendix are contained some statutes at length, the statistics of the German methods, and a tabular comparison of the provisions for workmen's insurance existing in different countries. The work will be found useful by those who are advocating compulsory contributory insurance in this country. E.B.

7.—*Other New Publications.**

Bellom (*Maurice*). Le chèque moderne. Étude suivie d'une proposition de loi. 8 pp., 8vo. Paris, 1909.

[A study of the use of cheques in France and of the difficulties in the way of its extension. The author suggests certain changes in the French law of 1865 resembling the German law as to cheques, 1908.]

——— Les lois d'assurance ouvrière à l'étranger. Supplement général. 588 pp., 8vo. Paris: Arthur Rousseau, 1909. 15 frs.

[This is the tenth and last volume of M. Bellom's work on industrial assurance in different countries. It deals with insurance against sickness, accidents, and infirmity in certain European countries, and gives the text of recent legislation dealing with social insurance in these countries. It is hoped to review this book at length in a later issue of the *Journal*.]

——— Les questions ouvrières et la science actuarielle. 102 pp., 8vo. Paris: H. Dunot et E. Pinat, 1909.

[An account, with certain criticisms, of the subjects discussed at the International Actuarial Congress at Vienna in 1909, in so far as they relate to social insurance. The book is written more especially for the engineering profession.]

Bianco (*Dr. Jose*). La Propiedad Inmobiliaria. Monografia del Registro de la Propiedad de la Capital federal y de los Territorios nacionales correspondiente al Año de 1908. Presentada al Ministero de Justicia por Jose Bianco, Director del Registro. 442 pp., 8vo. Buenos Aires: Landreau and Co., 1909.

[A report on the value of landed and other property in the city of Buenos Aires.]

Bonnal (*A.*). Bibliothèque du Conducteur de Travaux Publics. Exploitation commerciale des chemins de fer. Intérêt général, Intérêt local, tramways. 1094 pp., 8vo. Paris: H. Dunot et E. Pinat, 1909. 13*s.*

Borel (*Emile*). Éléments de la Théorie des Probabilités. Probabilités discontinues. Probabilités continues. Probabilités des causes. vii + 191 pp., 8vo. Paris: A. Hermann et Fils, 1909. 6 frs.

Burn (*Joseph*). Stock Exchange Investments in Theory and Practice, with chapters on the Constitution and Operations of the Bank of England and the National and Local Debts of the United Kingdom. A course of lectures delivered at the Institute of Actuaries during the Session 1908-09. vii + 322 pp., 8vo. London: C. and E. Layton, 1909.

Colajanni (*Napoleone*). Manuale di Demografia. 2ª edizione, 1909. viii + 754 pp., 8vo. Naples: L. Pierro, 1909.

Cooper (*Sir William Earnshaw, C.I.E.*). Britain for the Briton. Co-operative working of Agriculture and other Industries a necessity. An earnest appeal for land, industrial, economic and other vital reforms. xix + 390 pp., 8vo. London: Smith, Elder, and Co., 1909. 10*s.* 6*d.* net.

[Deals with the neglect of agriculture and the necessity for its improvement.]

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* See also "Additions to the Library," pages 772 *sqq.*

Craigie (*Major P. G.*). British Association, Winnipeg, 1909. Address to the Agricultural sub-section. 18 pp., 8vo. 1909.

[Deals generally with the leading factors that govern the fluctuations in agriculture in different countries and especially in new countries.]

Ellinger (*Barnard*). An analysis of our trade with Germany. 33 pp., charts, 8vo. Manchester: John Heywood, 1909. 3*d.*

[A useful statement of the growth of British trade with Germany during the last seventeen years.]

Fesch (*Paul*). L'année sociale et économique en France et à l'étranger, 1908. 726 pp., 8vo. Paris: Marcel Rivière, 1909. 7 fr. 50 c.

Gonnard (*René*). La Hongrie au 20^{e} Siècle. Etude economique et sociale. xii + 400 pp., 8vo. Paris: A. Colin, 1908. 4 fr.

[A study of the agricultural, economic and social conditions of Hungary, based on personal observation and data given in official publications. The book is concerned more especially with agriculture, and there are chapters dealing with the various holdings, the status of the agricultural labourer and rural emigration, as well as with the products of the country.]

Grogan (*Ewart S.*). The Economic Calculus and its application to tariff, 1909. 184 pp., 8vo. London: Simpkin Marshall, 1909. 1*s.* 6*d.* net.

Gürtler (*Dr. Alfred*). Die Volkszählungen Maria Theresias und Josef II, 1753-1790. 152 pp. + folded tables, 8vo. Wagner'sche Univ-Buchhandlung, 1909.

Hainisch (*Dr. Michael*). Einige neue Zahlen zur Statistik der Deutschösterreicher. 48 pp., 8vo. Leipzig: Franz Deuticke, 1909. 1*s.* 3*d.*

Heape (*Walter*), *M.A., F.R.S.* Philosophical Transactions of the Royal Society of London. Series B, Vol. 200, pp. 271—330. The Proportion of the Sexes produced by Whites and Coloured Peoples in Cuba. 4to. London: Dulau and Co., 1909.

Jacquart (*Camille*). Essais de statistique morale. II. Le Divorce et la séparation de corps. 166 pp., 8vo. Brussels: A. Dewit, 1909.

Jevons (*H. Stanley*). The Causes of Unemployment. (From "The Contemporary Review," 1909.) 77 pp., 8vo. 1909.

[The author discusses the question under the three heads of defects in elementary education, trade unionism and over-supply of unskilled labour, and trade fluctuations and solar activity.]

Julin (*Armand*). Précis du cours de Statistique générale et appliquée. 2nd edition avec une Préface par M. A. de Foville. xii + 242 pp., 8vo. Brussels: Misch et Thron, 1910.

Levy (*Dr. Hermann*). Monopole, Kartelle und Trusts in ihren Beziehungen zur Organisation der Kapitalistischen Industrie. Dargestellt an der Entwicklung in Grossbritannien. xiv + 323 pp., 8vo. Jena: Gustav Fischer, 1909. 7 marks 50 pf.

Macaulay (*Lord*). History of England. Chapter iii. With introduction and statistical notes by A. L. Bowley, M.A. viii + 171 pp., 12mo. Oxford, 1909.

Mill (*John Stuart*). Principles of Political Economy, with some of their applications to social philosophy. Edited with an introduction by W. J. Ashley, M.A. liii + 1013 pp., 8vo. London: Longmans, 1909. 5*s.*

Principalle (*Dott Luigi*). La ricchezza privata in Italia. 130 pp., fol. Naples, 1909.

Saint-Léon (*Et. Martin*). Économie sociale. Cartells et Trusts. 3e edit. 8vo. Paris: J. Gabalda et Cie, 1909.

Schjerning (*Otto von*). Sanitätsstatistische Betrachtungen über Volk und Heer. 116 pp., 8vo. Berlin: A. Hirschwald, 1910. 3*s.*

Sénéchal (*Léon*). La concentration industrielle et commerciale en Angleterre. Préface de M. Francis Laur. 8vo. Paris: La Société des Publications Scientifiques, 1909.

Smith (*W. Rose*). The growth of nations. xvi + 301 pp., 8vo. London: Swan, Sonnenschein and Co., 1909.

[This book is divided into two parts, the first dealing with the population capacity of countries, and the second with land and racial problems; and there are appendices dealing with small holdings and distraint for rates. It is argued that a country's population capacity is the direct result of its productive capacity, and that access to markets is the greatest stimulus to production. Both ends are to be secured by protective duties.]

Sombart (*Werner*). Socialism and the Social Movement. Translated from the Sixth (enlarged) German edition, with introduction and notes by M. Epstein, M.A., Ph.D. 8vo. London: J. M. Dent and Co., 1909. 3*s.* 6*d.* net.

Whetham (*W. C. D.* and *C. D.*). The Family and the Nation. A study in natural inheritance and social responsibility. 8vo. London: Longmans, Green and Co., 1909. 7*s.* 6*d.* net.

Zolla (*Daniel*). Les industries agricoles. Le Blé et les Céréales. 1909. (Encyclopédie Scientifique.) Sm. 8vo. Paris: O. Doin et Fils, 1909. 5 frs.

[This book forms part of the "Encyclopédie scientifique," published under the direction of Dr. Toulouse. It is an economic and statistical study of the production of wheat and other cereals in France and other countries. The topics dealt with include the production of cereals, retrospectively and prospectively regarded, the value of the crops, and the influence of prices on agricultral profits. The effect of customs duties on the price of grain, and the differences in the price of wheat in France and England, are also examined. There is a special study of the Paris corn markets, and incidentally the author touches upon the question of dealings in futures and forestalling. It is hoped to review this book at length in a later issue of the Journal.]

South Wales Coal Annual for 1909-10. Edited by Joseph Davies. 8vo. Cardiff: The Statistical Publishing Co., 1909. 7*s.* 6*d.* net.

[A useful work of reference for all matters connected with the South Wales coal and shipping trades. There are many statistical tables as to output of coal, workers employed, railway rates, prices and freights for the coasting and foreign trade.]

Germany. Allgemeines Statistisches Archiv. Band 7. Ergänzungsheft: Die Bearbeitung der Statistik der Bevölkerungsbewegung durch die Statistischen Ämter in Deutschen Reiche. Von Dr. Eugen Würzburger. xx + 77 pp., 8vo. 1909.

Cologne. Die Arbeitslosenzählungen in Cöln vom 17 Januar 1904 bis 24 Januar 1909. Bearbeitet und herausgegeben durch das Statistische Amt. 18 + 46 pp., fol. 1909.

Italy. Risultato di un' inchiesta eseguita dalla Direzione generale della statistica circa l'ordinamento degli Uffici centrali di statistica dei principali Stati. 30 pp., 8vo. Rome, 1909.

[This report embodies the results of an inquiry by the Statistical Department of Italy into the organisation and work of the central statistical offices of the principal European States and of Japan. The inquiry states briefly the scope of the principal periodical publications issued by the various statistical departments, and mentions also any other reports of exceptional importance. Statistics are given of the numbers employed in the respective bureaus, and of the temporary assistance secured for census work, as well as of the cost of the statistical departments. A further section of the inquiry deals with the cost of the last census in the countries in question, so far as this could be ascertained. The cost of the census per 100 inhabitants is given. It varies from 0·03 of a lire in Germany and Japan to 20·98 lire in Norway. It should be added that the inquiry also contains a useful list of periodical statistical publications in these countries apart from those issued by the statistical departments.]

Russia. Finland. Atlas de Statistique Sociale sur les communes rurales de Finlande en 1901. Fol. Helsingfors, 1908.

[An atlas of graphic statistics of Finland, issued by the Geographical Society of Finland. It is composed of 55 cartograms printed in colours, and deals with population, housing conditions of agricultural labourers, size of farms and of holdings, lands under cultivation, live stock and other matters of rural economy. The explanatory titles are given in Russian, French, and Finnish, in the order named. The maps are described at length in an article by Dr. Gebhard, who is the compiler of the atlas, in "Fennia," the journal of the Society.]

Sweden. Sveriges Jordbruk vid 1900. La. fol. 1909.

[A comprehensive study of the condition of agriculture in Sweden to-day, embodied in an exceptionally handsome volume. The book is illustrated by nearly one hundred cartograms and diagrams dealing with agriculture, geology, and meteorology, the distribution of the occupations of the people, and the general rural economy of the country. It is divided into three parts. The first part deals with natural conditions, in so far as they affect agriculture; the second with the demographic condition of the people in the different parts of the country, the occupations of the people, and the movement of population; and the third (in great detail) with general rural economy. The work is printed in Swedish, but there is also a table of contents in French, and this is supplemented by a vocabulary.]

United States. Statistical Abstract of Foreign Countries. Parts 1–3, Statistics of Foreign Commerce. October, 1909. First number. 8vo. Washington, 1909.

——— Bulletin 104. Mortality Statistics, 1908. General death rates. Causes of death. Occupational mortality. Second decennial revision of the international classification of causes of death. 4to. 1909.

——— Special Reports. Marriage and Divorce, 1867-1906. Part I. Summary, laws, foreign statistics. 4to. 1909.

——— American Economic Association. Quarterly. 3rd Series. Vol. x, No. 3. The Printers. A study in American trade unionism: *Barnett* (*George E.*). 387 pp., 8vo. Cambridge, Mass., 1909.

——— Columbia University Studies. Vol. xxxv, No. 3. Divorce. A study in social causation: *Lichtenberger* (*James P.*). 230 pp., 8vo. New York, 1909.

British South Africa. The Statistical Society of South Africa. Proportional Representation, with special reference to the Transvaal Municipal Elections (Proportional Representation) Act No. 23 of 1909. Presidential Address to the Society, 6th September, 1909. By Mr. Howard Pim, president 1907-08 and 1908-09. 19 pp., 4to. 1909.

New South Wales. Tuberculosis in New South Wales. A statistical analysis of the mortality from tubercular diseases during the last thirty-three years. By John B. Trivett, Government Statistician. v + 81 pp., diagrams, 8vo. 1909.

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Accountants' Magazine. *November*, 1909—Check figure systems: *Muir (A. H.)*.

Bankers' Magazine, 1909—

October—The operations of the Royal Mint. Trustee savings banks: investment departments, &c.: *Gibson (A. H.)*. The Anglo-South American bank. Bank of the Netherlands, 1908-09. Actuarial science in relation to economics and sociology: *Warner (Samuel George)*.

November—The Lords and the Budget. Investments, exports and employment. Comparative studies of bank reports. The American bankers' convention. Lord Swaythling (with portrait). The Lords and the Finance Bill.

December—Bankers' superannuation and pension funds. The influence of the taxation of capital upon the welfare of a country: *Palgrave (Sir R. H. Inglis)*. British and American banking: *Lawson (W. R.)*.

Economic Journal. *September*, 1909—Hours of labour: *Chapman (S. J.)*. Land reform in Ireland: *Bonn (M. J.)*. The assessments of flats, &c.: *Lyons (F. O.)*. The apprenticeship question: *Bray (R. A.)*. Voices from the Indian Up-country. Banking and money-lending: *Perrott (H. R.)*. The coal crisis: *Jones (T. I. M.)*.

Economic Review. *October*, 1909—Old Testament economics: *Cooke (Rev. Prof. G. A.)*. Labour exchanges and boy labour: *Chamberlain (Norman)*. Economic aspects of income-tax change: *Stamp (J. C.)*. The problem of unskilled labour: *Lightbody (W. M.)*. The religion of the poor: *Iselin (The Rev. Henry)*. Legislation, parliamentary inquiries, and official returns: *Pringle (Rev. J. C.)*.

Financial Review of Reviews, 1909—

October—Industrial developments in Australasia: *Perceval (Sir W. B.)*. The truth about the United States steel trust: *Good (T.)*. Financial effect of the Shop Hours Bill: *Barker (Sir John)*. The value of a balance-sheet analysis: *Heath (C. A.)* and *Fitzgerald (J. H.)*.

November—Turkey's financial programme: *Russo (Nassim)*. The House of Lords and the Budget: *Hill (Viscount)*. From the Forth to the Clyde. Commercial advantages of a State canal: *Campbell (Sir Charles)*.

December—Our "Over Big" Navy and geographical investors: *Fremantle (Sir Edmund)*. Influence of the harvest on the investment of capital: *Guyot (Yves)*.

Journal of the Board of Agriculture, 1909—

September—Farm accounts: *Peet (John O.)*. Imports of grain in the cereal year 1908-09. Statistical tables, &c.

October—Agricultural education in England and Wales. Agricultural returns of 1909. The operation of the Small Holdings Act during 1908. Prices of agricultural produce.

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Journal of the Board of Agriculture, 1909—*Contd.*

November—Small fruit growing in Kent: *Hooper (Cecil H.).* The International Statistical Institute.

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Journal of Institute of Actuaries. October, 1909—Notes on mortality and life assurance in India: *Winter (A. T.).* On formulas for the force of mortality: *Fraser (Duncan C.).*

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October—English and American banking methods: a comparison and contrast: *Shearme (J. A.).* London Chamber of Commerce Committee on gold reserves.

November—English and American banking methods: a comparison and a contrast: *Perry (S. E.).* Annual report of the Deputy Master of the Mint. Stamp duties on cheques, bills of exchange and promissory notes in Germany.

Manchester Statistical Society. Transactions. Session 1908-09—An analysis of our trade with Germany: *Ellinger (Barnard).* The rating of land values: *Corbett (J. Rooke).* The importance of afforestation and its possibilities: *Weiss (Prof. F. E.).* The progress of tropical medicine: *Boyce (Sir Rubert W.).* Depression in trade and its causes: *Hesketh (W. T.).*

Surveyors' Institution. Transactions. Session 1908-09. *Part XIII*—Report of Council. Balance sheet, 1908. Obituary notices, &c.

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American Journal of Sociology, 1909. *September*—The teaching of sociology in the United States: *Bernard (L. L.).* The claims of sociology examined: *Ford (Henry Jones).*

American Statistical Association. Quarterly Publications. No. 87. *September*, 1909—The extent of unemployment in the United States: *Nearing (Scott).* California vital statistics: *Young (Allyn A.).* Bibliography of the writings of Hon. Carroll D. Wright, 1874-1908. Second decennial revision of the international classification of causes of death. Paris, July 1—3, 1909. The need of statistics of area in the United States: *Gehlke (C. E.).*

Bankers' Magazine (New York), 1909—

September—The big banks of to-day. IV. The Scottish banks (*continued in October Issue*): *Lawson (W. R.).* The City of New York and its bondholders: *Wall (J. G.).* Canadian banking and commerce: *Eckardt (H. M. P.).* St. Louis after a hundred years: *Byars (W. V.).*

October—Women as bankers: *Reesor (Mrs. E. E. B.).* The Chicago convention: *White (Edward).* Farm lands as security for investment: *White (Edward).*

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November—The proposed central bank. The truth about Mexico: *Smith* (*E. S.*). The payment of interest on deposits subject to check: *Fletcher* (*Henry*).

Journal of Political Economy, 1909—

October—The public debt of New Zealand: *Rossignol* (*J. E. Le*) and *Stewart* (*W. D.*). The Hughes investigation: *White* (*Horace*).

November—The tariff of 1909. I: *Willis* (*H. Parker*). The limitations of marginal utility: *Veblen* (*Thorstein*). Currency; the problem of flexibility: *Tucker* (*R. H.*). The strike at Iquique: *Laughlin* (*J. L.*).

Political Science Quarterly. September, 1909—Municipal government in Porto Rico: *Willoughby* (*W. F.*). The wheat situation in Washington: *Berglund* (*A.*). Capital and interest: *Fisher* (*Irving*).

Quarterly Journal of Economics. November, 1909—The tariff debate of 1909 and the new tariff Act: *Taussig* (*F. W.*). American shoemakers, 1648-1895; a sketch of industrial evolution: *Commons* (*J. R.*). Insurance of bank deposits in the West. 1. Oklahoma: *Cooke* (*T.*). Technical development in cotton manufacturing since 1860: *Copeland* (*M. T.*). The measurement of concentration of wealth: *Watkins* (*G. P.*) and *Persons* (*W. M.*). Workmen's insurance in Germany; some illustrative figures. The financial results of the increment tax in German cities: *Holcombe* (*A. N.*).

Annals of American Academy of Political and Social Science, September, 1909—(Contains a series of papers by different authors on the Chinese and Japanese in America, grouped under four heads): Part 1. The argument in favour of oriental exclusion. Part 2. The argument against oriental exclusion. Part 3. National and international aspects of the exclusion movement. Part 4. The problem of oriental immigration outside of America.

Yale Review. November, 1909—The mores of the present and the future: *Sumner* (*W. G.*). Financial reform in Germany: *Cohn* (*G.*). Organisation among the farmers of the United States: *Coulter* (*J. L.*). Early railroad monopoly and discrimination in Rhode Island, 1835-55: *Towles* (*J. K.*).

AUSTRIA-HUNGARY—

Statistische Monatschrift, 1909—

August—Streiflichter aus dem Bereiche der letzten 25 Jahre Österreichischer Ehelösungsstatistik: *Englisch* (*Dr. Karl Ritter von*). Österreichs Sparkassen in Jahre 1907 (*continued in September issue*): *Korompay* (*Alfred*).

September—Die galizische Saisonauswanderung im Lichte ausländischer Arbeitsverträge: *Kumaniecki* (*Dr. K. L.*).

October—Die Entstehung, Entwicklung und Tätigkeit der Konferenz für Landesstatistik: *Berthold* (*Karl*). Die Wohnungsfürsorge für alleinstehende Personen: *Fuchs* (*Dr. A. J.*). Analphabeten und Schulbesuchsentziehung in Steiermark: *Pfaundler* (*Dr. H.*). Die Säuglingssterblichkeit in Österreich: *Rosenfeld* (*S.*).

FRANCE—

Annales des Sciences Politiques. November, 1909—La police sanitaire et la prophylaxie internationale: *Roussellier* (*A.*). Le problème agraire en Espagne: Andalousie et Galice. II. En Galice: *Marraud* (*A.*). Les progrès d'une région de France. La situation des cultivateurs en Pologne, il y a cinquante ans et aujourd'hui: *Payen* (*Ed.*). Les projets d'impôts sur la publicité, et sur le gaz et l'électricité, en Allemagne: *Delaygue* (*L.*). La réforme des finances de l'Empire allemand: lois du 15 juillet 1909: *Lèbe-Gigun* (*P.*).

Bulletin de Statistique, Ministère des Finances, 1909—

August—Les contributions directes et les taxes assimilées. Statistique des fabriques, entrepôts, magasins de vente en gros et magasins de vente en détail, etc., soumis en 1908 aux exercices des agents des contributions indirectes. La situation financière des départements en 1905.

September—Le projet de budget (rectifié) de 1910. Produits des contributions indirectes perçus et constatés pendant le 1^er^ semestre des années 1909 et 1908. Les octrois en 1908.

October—Le commerce extérieur en 1908. (France et Algérie) (Résultats définitifs). Les dons et legs en faveur d'œuvres d'assistance et d'instruction en 1908. (Allemagne.) La réforme financière (suite) impôt sur l'alcool: (loi du 15 juillet 1909).

Journal des Économistes, 1909—

September—Comment on peut relever le taux des salaires: *Molinari* (*G. de*). L'État socialiste: *Bonnaud* (*Paul*). L'Enquête sur la Banque d'Allemagne: *Raffalovich* (*Arthur*). La loi sociale: *Rauline* (*René*). Le régime des alcools en Italie: *Giretti* (*Edoardo*). Mouvement scientifique et industriel: *Bellet* (*Daniel*).

October—Les travaux parlementaires de la Chambre des députés (1908-09): *Liesse* (*André*). Le port de Paris: *Letourneur* (*E.*). Mouvement financier et commercial: *Zablet* (*Maurice*).

November—Programme: *Guyot* (*Yves*). Le droit financier de la Chambre des Lords: *Un Légiste*. La campagne contre les sociétés de crédit: *Guyot* (*Yves*). Le commerce extérieur de l'Italie en 1908: *Giretti* (*E.*). Nancy et Lorraine: *Raffalovich* (*A.*). La question des retraites ouvrières en France: *Bellom* (*Maurice*). Mouvement agricole: *Molinari* (*Maurice de*). La balance du commerce: *Passy* (*Frédéric*).

Journal de la Société de Statistique de Paris, 1909—

August—Le Cinquantenaire de la Société, la séance—le banquet —notre volume. La xii^e^ session de l'Institut international de statistique. Enquête sur le prix des denrées alimentaires, depuis un quart de siècle dans soixante-dix lycées: *Levasseur* (*E.*). Les mouvements des fonds d'états des grands pays: *Neymarck* (*A.*). Les migrations internes dans quelques grandes villes: *Meuriot* (*Paul*).

FRANCE—*Contd.*

Journal de la Société de Statistique de Paris, 1908—*Contd.*

September—Fécondité française (*continued in October issue*): *Bournisien* (*Ch.*). Statistique de la propriété communale dans la zone montagneuse de l'Aude: *Roquette-Buisson* (*Comte de*). Statistique de la propriété communale dans la zone montagneuse des Pyrénées-Orientales: *Roquette-Buisson* (*Comte de*).

October—Statistique annuelle du mouvement de la population de la France, d'après les registres d'état civil au cours de l'année 1908: *March* (*Lucien*). Les taxes de remplacement des droits d'octroi sur les boissons hygiéniques à Paris (*continued in November issue*): *Desroys du Roure* (*E.*). La mortalité par professions en Angleterre: *Cook* (*Arthur J.*).

November—Les émissions et remboursements d'obligations des six grandes compagnies de chemins de fer en 1908: *Neymarck* (*Alfred*). Note sur la comparaison du tonnage P.V. transporté par voie de fer et par voie d'eau dans la région du nord en 1907: *Bernard* (*M.*).

La Réforme Sociale, 1909—

1*st*—16*th September*—La récente enquête de la Société des agriculteurs de France sur les causes de l'abandon des campagnes: *Larollée* (*René*). La culture intensive et les conditions de la main-d'œuvre agricole dans les fermes industrielles de l'Ile-de-France: *Hitier* (*H.*). L'émigration temporaire agricole, ses causes, ses modes, ses effets: *Boissieu* (*H. de*). Le devoir social du propriétaire exploitant dans le sud-ouest de la France: *Rendu* (*A.*). Enquêtes monographiques sur la désertion des campagnes. L'admission aux bénéfices de l'association des ouvriers at employés d'une importante industrie anglaise: *Lever* (*W. H.*).

1*st*—16*th October*—L'enseignement agricole comme moyen d'enrayer l'exode rural: *Vuyst* (*P. de*). Nos migrations provinciales hier et aujourd'hui: *Angot des Rotours* (*Baron J.*). De l'influence du partage égal sur la désertion des campagnes: *Bourbon-Lignières* (*Le Comte de*). Enquête monographique sur la désertion des campagnes.—Le département de l'Isère: *Helly* (*A.*). Du role des sociétés d'assurances privées en matière d'assurance sociale: *Bellom* (*Maurice*).

1*st November*—L'industrie de la lingerie dans le centre de la France: *Hayem* (*Julien*). La Société d'encouragement et de bienfaisance pour les campagnes du département de Meurthe-et-Moselle: *Metz-Noblat* (*M. de*). Le problème de l'habitation ouvrière dans les campagnes: *Pasquier* (*I.*). Enquête sur la désertion des campagnes.—Le département de l'Aveyron: *Bouloc* (*Enée*).

16*th November*—L'habitation de l'ouvrier agricole et les petites locations à long terme dans la Flandre maritime française: *Farière* (*A.*). Les causes morales et économiques de la désertion des campagnes: *Imbart de la Tour* (*Comte J.*). L'assistance dans les campagnes: *Cilleuls* (*Alfred des*).

FRANCE—*Contd.*

La Réforme Sociale—Contd.

1st December—Le travail des femmes à la campagne (premier article): *Ardouin-Dumazet* (*M.*). Enquête sur la désertion des campagnes.—Le departement du Doubs: *Briot* (*Charles*). La ligue nationale pour le relèvement des petites industries rurales: *Leroy-Liberge* (*Mme. G.*). Le congrès du "Verein fur social Politik": *Blondel* (*G.*).

Revue d'Economie Politique, 1909—

August—September—La cherté de l'argent et les mesures pour simplifier la circulation monétaire en Allemagne: *Mehrens* (*B.*). La maternité et l'évolution capitaliste: *Lewinski* (*Jan.-St.*). Les associations agricoles en Portugal: *Luiz de Castro* (*D.*). La question des villes: *Petavel* (*J. W.*).

October—L'infiltration des idées sociales dans la littérature économique allemande: *Philippovich* (*Eugène de*). Le protectionisme rationnel et la réforme douanière en France: *Sauvaire-Jourdan* (*F.*). Sociologues et solidarité: *Maunier* (*René*).

GERMANY—

Archiv für Rassen- und Gesellschafts-Biologie. July—August, 1909—Spaltungen bei Folgen von Bastardierung und von spontaner Variabilität: *Fruwirth* (*Dr. C.*). Die Anlage zur Mehrlingsgeburt beim Menschen und ihre Verehrung (Forsetzung) (*continued in September—October issue*): *Weinberg* (*Dr. Wilh.*). Der Einfluss von Fruchtbarkeit, Sterblichkeit und Konstitutionskraft auf den Heeresersatz nach Wohndichtigkeit, sozialer Stellung und Beruf: *Claassen* (*Dr. Walter*). Stadt und Land als biologische Umwelt (I. Teil) (*continued in September—October issue*): *Kohlbrugge* (*J. H. F.*).

Archiv für Sozialwissenschaft und Sozialpolitik. Heft 3, 1909—Der kapitalistische Unternehmer: *Sombart* (*Werner*). Der Ausbau der Sozialversicherung in Österreich. II. (Schluss): *Gaertner* (*Friedrich*). Kornteuerung und Handelspolitik. (Ein Vortrag): *Salz* (*Dr. Arthur*). Die gesetzliche Regelung des Tarifvertrages. II. (Schluss): *Wölbling* (*P.*).

Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft (*Schmoller's*), *Heft* 4, 1909—Vereinigungsformen und Interessenbeteiligungen in der deutschen Grossindustrie: *Voelcker* (*Henry*). Der Kapitalmangel in seinem Verhältnisse zur Güterwelt: *Spiethoff* (*Arthur*). Die parlamentarische Obstruktion in Österreich: *Garr* (*Max*). Das deutsche Volkseinkommen und der Zuwachs des deutschen Volksvermögens im Jahre 1907: *May* (*R. E.*). Die Arbeiterverhältnisse im älteren schwedischen Bergbau von 1300-1720: *Sommarin* (*Emil*). Die Kötner-, Häusler-, und Einliegerklassen in Schweden: *Wohlin* (*Nils*). Die Rentengüter von Granada. Ein Beitrag zur Geschichte der inneren Kolonisation in Spanien: *Leonhard* (*Rudolf*). Die gewerbliche Betriebszählung in Österreich vom 3 Juni 1903. Vorgeschichte, Methode und Ergebnisse:

GERMANY—*Contd.*

Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft (*Schmoller's*), *Heft* 4, 1909—*Contd.*

Most (*Otto*). Die Verteilung des Grundbesitzes in Russland: *Claus* (*Rudolf*). Die Österreichische Sozialversicherungsvorlage: *Lederer* (*Emil*). Die Entwicklung von Friedrich Lists kolonial und weltpolitischen Ideen bis zum Plane einer englischen Allianz 1846: *Sevin* (*Ludwig*). Ein Vorschlag zur Verwaltung von Stiftungsvermögen: *Zeiler* (*Alois*). Der Handel und die Industriekartelle: *Wiedenfeld* (*Kurt*).

Jahrbücher für Nationalökonomie und Statistik (*Conrad's*), 1909—

September—Die neueste Entwicklung des Arbeitstarifvertrages in Deutschland: *Köppe* (*H.*). Englands wirtschaftliche Gesetzgebung im Jahre 1907: *Brodnitz* (*Georg.*). Die Bodenreform: *Goldstein* (*Ferdinand*). Die Arbeitgeber und die Arbeitnehmer im Lichte von Ad. Smith: *Siew* (*Maurice*). Ueber die neuesten medizinisch-statistischen Arbeiten ihre Methoden und ihre Ergebnisse (Forsetzung): *Prinzing* (*Friedrich*).

October—Schleswig-Holstein in der deutschen Agrargeschichte: *Rachfahl* (--). Rekrutenstatistik und Volksgesundheit: *Fischer* (*Alfons*). Die wirtschaftsliche Gesetzgebung der deutschen Bundesstaaten im Jahre 1908 (Fortsetzung) (*continued in November issue*): *Meyer* (*Otto*). Gesetz v. 12 Juli 1909 über die Errichtung der Heimstätte in Frankreich. II. (Schluss): *Rudloff* (*Hans L.*). Das Internationale Statistische Institut in seiner XII Tagung zu Paris, 1909: *Zimmermann* (*F. W. R.*). Ueber den wirtschaftlichen Begriff des Versicherungsagenten: *Kleeberg* (*August*). Sterblichkeit und Fortpflanzung der Stadtbevölkerung: *Ballod* (*Carl*).

November—Das Zunftwesen Konstantinopels im 10 Jahrhundert. Ein Vortrag über „Le livre du préfet“: *Gehrig* (*Hans*). Die Handelspolitik Nürnbergs im Spätmittelalter: *Müller* (*Johannes*). Das Branntweinsteuergesetz vom 15 Juli 1909: *Wassermann* (*Ludwig*). Schwedische Wirtschaftsverhältnisse: *Kreuzkam* (—). Die Kaffeevalorisation: *Schmidt* (*Fritz*). Die Streikstatistik in Italien: *Silvestri* (*M.*).

Zeitschrift für Sozialwissenschaft—

Heft 9—Zwischenstaatliche Wanderung und Ungleichkeit der Menschenrassen, II.: *Sartorius* (*Freiherr v. W. A.*) Nationalökonomie als exakte Wissenschaft. *Wolf* (*Julius*). Verfassung und Verwaltung der freien Gewerbschaften. i. Deutschland. I. (*continued in October and November issues, Hefte* 10 *und* 11.) *Schildbach* (*Bernhard*).

Heft 10—Heiratshäufigkeit und Bevölkerungsvermehrung in den europäischen Staaten: *Prinzing* (*Friedrich*).

Heft 11—Aus- und Einwanderung und die Lehre von der gesellschaftlichen Auslese: (*Sartorius Freiherr von W. A.*) Über den Erfolg der Reform der Pachtgesetzgebung in England: *Mayer* (*Adolf*). Das Wolfsche Bevölkerungsgesetz und das Bevölkerungsproblem der Juden in Deutschland: *Wassermann* (*Rudolf*).

GERMANY—*Contd.*

Zeitschrift für die gesamte Staatswissenschaft. Heft 4, 1909—Die staatsrechtliche Stellung des belgischen Kongogebietes: *Oppenheimer* (*Alfred*). Zwei Beiträge zur spanischen Wirtschaftspolitik im 18 Jahrhundert: *Leonhard* (*Rudolf*). Die Kapitalfunktion des Geldes: *Meyer* (*A.*). Der nationale Besitzstand und die nationalen Siedlungsverhältnisse in Mähren und (österr.) Schlesien: *Herz* (*Hugo*). Die Fortbildung des Wahlverfahrens: *Tecklenburg* (*Adolf*). Der Begriff des Bundesstaates: *Rosenberg* (*Werner*). Die XII. Tagung des Internationalen Statistischen Instituts zu Paris, 1909: *Zimmerman* (*F. W. R.*). Die Finanzen der britischen Gewerbschaften: *Fehlinger* (*H.*).

Zeitschrift für Versicherungs-Wissenschaft. October, 1909.—Zur Kritik der Reichsversicherungsordnung (Schluss): *Stier-Somlo* (*Dr.*). Zur Frage der sogenannten Abonnentenversicherung: *Schneider* (—). Die Vermögensverteilung bei der Auflösung von Pesionskassen mit Durchschnittsbeiträgen: *Pietsch* (*Dr.*). Ergebnisse des VI. Internationalen Kongresses für Versicherungs-Wissenschaft in Wien: *Moldenhauer* (*Dr.*). Die Arbeiterversicherung in Russland: *Stryk* (—). Näherungsformeln für den Risikogewinn in der Todesfall-, Invaliditäts-, und Rentenversicherung: *Böhmer* (*Dr.*).

ITALY—

Giornale degli Economisti, 1909—

August—La situazione del mercato monetario. Il programma di statistica agraria all' Istituto internazionale di agricoltura: *Dragoni* (*C.*). La legge sulle tabelle dei salari per la determinazione dell' indennita negli infortuni delle solfare di Sicilia: *Colajanni* (*P.*). L'imposta sul prodotto dei terreni e la piccola proprieta rurale in Italia: *Lolini* (*E.*). Sulla distribuzione per salario dei minatori di carbone nel Belgio, 1896-1900 (*continued in September issue*): *Mengarini* (*P.*).

September—Di alcuni fenomeni di dinamica economica: *Pantaleoni* (*M.*). I principii della teoria economica della moneta: *Vecghio* (*e Del*).

Riforma Sociale. September—October, 1909—L'inchiesta reale sul pauperismo e sulla "poor law" nel Regno Unito: *Pestelli* (*Gino*). Banca industriale: *Benedetti* (*Emilio de*). La politica del libero scambio ed il commercio esterno, dell' Inghilterra: *Garino* (*Attilio*). Ferrovie e finanze in Italia: *Flora* (*Frederico*). Le vicende del consorzio obbligatorio per le miniere della Sicilia: *Bruccoleri* (*G.*). Interpretazioni erronee della distribuzione del reddito: *Ottolenghi* (*C.*). Esperienze municipalizzatrici: *Fenoglio* (*G.*). La questione agraria in Russia: *Astromoff* (*B. K.*).

Rivista Italiana di Sociologia. May—August, 1909—L'aspetto soggettivo del movimento della popolazione nei principali sistemi socialisti teorici: *Sensini* (*G.*). Vicinie e Comuni: *Luzzatto* (*G.*). La protezione dell' infanzia nella nuova legislazione svizzera: *Bertoni* (*B.*).

QUARTERLY LIST OF ADDITIONS TO THE LIBRARY.

During the Quarter ended 15th December, 1909, the Society has received the publications enumerated below. The titles are arranged alphabetically by subjects (works of a general nature coming first) under the following heads:—(a) Foreign Countries; (b) India and Colonial Possessions; (c) United Kingdom and its Divisions; (d) Authors, &c.; (e) Societies, &c. (British); (f) Periodicals, &c. (British).

(a) Foreign Countries.

Argentine Republic—

Agriculture. Ministerio de Agricultura. Boletín mensual de estadística agricola. (Current numbers.) 8vo. 1909	The Ministry of Agriculture
Buenos Ayres (*Province*). Boletín mensual de la Direccion General de Estadística. (Current numbers.) Fol. 1909	The Provincial Statistical Bureau
Buenos Ayres (*City*). Year-book of the City of Buenos Aires. 18th year, 1908. 8vo. 1909	The Municipal Statistical Bureau
Santa Fé. Boletín de estadística municipal. (Current numbers.) Fol. 1909	

Austria-Hungary—

Österreichisches Wirtschaftspolitisches Archiv (vormals "Austria"). (Current numbers.) 8vo. 1909	The Ministry of Commerce
Statistische Monatschrift. (Current numbers.) 8vo. 1909	The Central Statistical Commission
Agriculture. Statistische Nachrichten aus dem Gesammtgebiete der Landwirtschaft. (Current numbers.) 8vo. 1909	
—— Ergebnisse der Landwirtschaftlichen Betriebszählung vom 3. Juni 1902. Heft 1. Analytische Bearbeitung. Summarische Daten für das Reich, die Verwaltungsgebiete und Länder, nebst Anhang enthaltend Übersichten nach natürlichen Gebieten. Fol. 1909	The President, Ministry of Commerce
Bankruptcies. Die Ergebnisse des Konkursverfahrens im Jahre 1907. Fol. 1909	The Central Statistical Commission
Census. Bevölkerung und Viehstand der im Reichsrathe vertretenen Königreiche und Länder dann der Militärgränze nach der Zählung vom 31 December 1869. Heft 4. Viehstand. 4to. 1871	
Justice. Ergebnisse der Zivilrechtspflege im Jahre 1907 mit Ausschlusz des Konkursverfahrens. Fol. 1909	
—— Statistische Übersicht der Verhältnisse der Österreichischen Strafenstalten und der Gerichtsgefängnisse im Jahre 1907. Fol. 1909	
Labour. Arbeitszeitverlängerungen (Überstunden) im Jahre 1908 in fabriksmässigen Betrieben. 26 pp., 8vo. 1909	The Austrian Labour Department
—— Arbeitsstatistisches Amt. Protokoll der fünfundzwanzigsten Sitzung des Arbeitsbeirates vom 24 May, 1909. 8vo. 1909	

(a) Foreign Countries—*Contd.*

Austria-Hungary—*Contd.*

Sickness. Statistik des Bergbaues in Österreich für das Jahr 1907. Lieferung 3. Die Gebarung und die Ergebnisse der Krankheits-, Mortalitäts-, und Invaliditäts-Statistik der Bergwerksbruderladen im Jahre 1906. 4to. 1909	The Ministry of Public Works
Bosnia and Herzegovina. Trade. Hauptergebnisse des Auswärtigen Warenverkehres Bosniens und der Hercegovina im Jahre 1908. II. Jahrgang. 83 pp., 8vo. 1909	The Statistical Bureau
Bukowina—	
Agriculture. Die Zählung der landwirtschaftlichen Betriebe der einzelnen Gerichts- und politischen Bezirke im Herzogtume Bukowina auf Grund der Ergebnisse der Erhebungen vom 3 Juni. 1902. 8vo. 1909	
Census. Die Bevölkerung des Herzogtums Bukowina nach dem Berufe. 8vo. 1909	
—— Die Zählung der gewerblichen Betriebe des Handelskammerbezirkes und der Stadt Czernowitz im Herzogtume Bukowina auf Grund der Ergebnisse vom 3 Juni. 1902. 8vo. 1909	
Finance. Die Hypothekarverschuldung des Grossgrundbesitzes physischer Personen in der Bukowina des Grundbesitzes in der Landeshauptstadt Czernowitz 8vo. 1907	
Vienna. Die Gemeinde-Verwaltung der k.k. Reichshaupt- und Residenzstadt Wien im Jahre 1907. Bericht des Bürgermeisters Dr. Karl Lueger. 8vo. 1909	The Secretary, Board of Agriculture and Fisheries
Budapest—	
Monatshefte des Budapester Communal-Statistischen Bureaus. (Current numbers.) 1909	The Municipal Statistical Bureau
Wochenausweis des Budapester Communal-Statistischen Bureaus. (Current numbers.) 1909	

Belgium—

Agriculture. Statistique de la Belgique. Recensement agricole de 1907 . . . Partie analytique. 41 pp., 8vo. 1908	The Ministry of Agriculture
Labour. Annuaire de la Législation du Travail publié par l'Office du Travail de Belgique. 12^e Année, 1908. 8vo. 1909	The Belgian Labour Department
Mines. Annales des Mines de Belgique. Année 1909. Livraison 4. 8vo. 1909	
Académie royale de Belgique. Bulletin de la classe des lettres. (Current numbers.) 8vo. 1909	The Academy

Brazil—

Brazilian Review. (Current numbers.) Fol. 1909	The Editor

Bulgaria—

Bulletin mensuel de la Direction générale de statistique du royaume de Bulgarie. (Current numbers.) 4to. 1908	The Statistical Bureau
Trade. Mouvement commercial de la Bulgarie avec les pays étrangers. 2^e trimestre de 1909. 4to. 1909	

(a) **Foreign Countries**—*Contd.*

China—

Customs Gazette. (Current numbers.) 4to. 1909....	The Inspectorate-General of Customs
Returns of Trade and Trade Reports. 1908. Part II. Port Trade Statistics and Reports. Vol. 1, Northern Ports. Vol. 2, Yangtze Ports. Vol. 3, Central Ports. Vol. 4, Southern Coast Ports. Vol. 5, Frontier Ports. 6 vols., 4to. 1909	

Cuba—

Agriculture. Boletín oficial de la Secretaria de agricultura, industria y comercio. (Current numbers.) 8vo. 1909	National Library, Havannah
Agriculture and Live Stock Riqueza pecuaria existencia. Importacion y consumo de ganado. Años 1907 y 1908. Fol. 1909	The Secretaria de Hacienda
Trade. Estadistica general. Comercio exterior. Primer semestre del año 1908 y año fiscal de 1907 à 1908. Fol. 1909	
Municipio de Cardenas. Copio del presupuesto ordinario de Gastos e Ingresos aprobado para el Ano economico de 1909 à 1910. Fol. 1909............	The National Library
The Republic of Cuba in 1909. September. 45 pp., 8vo. 1909	The Secretaria de la Presidencia

Denmark—

Communications statistiques. 4ᵉ série. Tome 31. 8vo. 1909 .... [Contains the Returns of the Harvest for 1908, and also the statistics of the municipal elections and of the elections to the "Folketing" for 1909.]	The State Statistical Bureau
Shipping. La Marine marchande et la navigation du Danemark, 1908. 4to. 1909	
Copenhagen. Aarsberetning angaaende sundhedstilstanden i Kobenhavn for 1908. Sm. 4to. 1909	The Health Department

Egypt—

Shipping. Second quarterly return of shipping, cargo and passenger traffic in the ports of Egypt and Suez Canal transits for 1909. 2nd series. 2nd year. Fol. 1909	The Statistical Department, Ministry of Finance

France—

Agriculture. Ministère de l'Agriculture. Bulletin mensuel de l'Office de renseignements agricoles. (Current numbers.) 8vo. 1909	The Ministry of Agriculture
Finance. Ministère des Finances. Bulletin de statistique et de législation comparée. (Current numbers.) 8vo. 1909	The Ministry of Finance
Trade. Commerce de la France. Documents statistiques [mensuels]. (Current numbers.) 8vo. 1909	The Director-General of Customs
—— Tableau général du commerce et de la navigation. Année 1908. Vol. 1. Commerce de la France avec ses colonies et les Puissances étrangères. 4to. 1909	The French Government
Paris. British Chamber of Commerce, Paris. Monthly Circular. (Current numbers.) 4to. 1909	The Chamber
Colonies. Statistiques du Commerce des Colonies françaises pour 1907. Tome 1. Statistiques générales. Rapports sur le Commerce. Statistiques générales des colonies françaises pour 1907. Rapport sur le Commerce pendant 1907. 8vo. 1909	The French Colonial Office

(a) **Foreign Countries**—*Contd.*

Germany—

Vierteljahrshefte zur Statistik des Deutschen Reichs. Heft 4. 4to. 1909	The Imperial Statistical Bureau
Census. Berufs-und Betriebszählung vom 12 Juni 1907. (1) Berufsstatistik. Abt. vi. (Grossstädte) Heft 1. (2) Gewerbliche Betriebsstatistik. Abteilung VI. Kleinere Verwaltungsbezirke: Preussen. (3) Landwirthschaftliche Betriebsstatistik. Teil 1a. Gliederung der Betriebe, Reich und Bundesstaaten. 3 vols., 4to. 1909	
Health. Veröffentlichungen des Kaiserlichen Gesundheitsamtes. (Current numbers.) 8vo. 1909	The Imperial Health Bureau
—— Die Ausbreitung des Lupus im Deutschen Reiche. Map. 8vo. 1909	
—— Die Heilanstalten des Deutschen Reiches nach den Erhebungen der Jahre 1902-03-und 04. 8vo. 1909	
—— Die Tätigkeit der im Deutschen Reiche errichteten staatlichen Anstalten zur Gewinnung von Tierlymphe während des Jahres 1908. 8vo. 1909	
—— Ergebnisse der amtlichen Pockenstatistik im Deutschen Reiche vom Jahre 1907. 8vo. 1909	
Insurance. Amtliche Nachrichten des Reichs-Versicherungsamts. 2 Beiheft. Statistik der Heilbehandlung bei den Versicherungsanstalten und zugelassenen Kasseneinrichtungen der Invalidenversicherung für die Jahre 1904-08. 4to. 1909	The Imperial Insurance Bureau
Justice. Kriminalstatistik fur das Jahr 1907. 4to. 1909	The Imperial Statistical Bureau
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Blue-book for the Colony of Mauritius, 1908. Fol. 1909	The Colonial Secretary

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Army Veterinary Service. Statistical and General Report for 1908. 8vo. 1909	The Director-General
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Census of Production (1907). Preliminary tables summarising the results of the returns received under the Census of Production Act, 1906. Part 1. [Cd-4896.] 1909	Sir Philip Magnus, M.P.
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Friendly Societies. Report of Chief Registrar of Friendly Societies for 1908. Part A. (105.) 1909. Part A, Appendix (O), Particulars of valuation returns. (105-I.) 1909	The Chief Registrar of Friendly Societies
Inland Revenue. 52nd Report of Commissioners of His Majesty's Inland Revenue for year ended 31st March, 1909. [Cd-4868.] 1909	The Commissioners
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Poor. Royal Commission on Poor Laws and Relief of Distress. Appendix, vol. iv. Minutes of evidence (72nd to 89th days), with Appendix. This volume contains evidence of British Medical Association and of witnesses from Liverpool and Manchester districts, West Yorkshire, Midland towns. [Cd-4835.] 1909	The Commission

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—— Appendix. Vol. xiii. Special reports from the dioceses in England and Wales as to extent and intensity of poverty and the administration of charitable and poor law relief. [Cd-4850.] 1909	
—— Appendix. Vol. xix. Report by Mr. Cyril Jackson and Rev. J. C. Pringle on the Effects of Employment or Assistance given to the "Unemployed" since 1886 as a means of relieving distress outside the Poor Law. [Cd-4795.] 1909	
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Railways. Summary of statistics of railways in the United Kingdom for 1898, 1904-08. Sheet. 1909....	Mr. W. Bygate
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Bastardy Orders. Report of Select Committee, with proceedings of Committee, minutes of evidence, and appendix. (236.) 1909	
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Mayr (*Dr. Georg v.*). Der vii Internationale Kongress für Sozialversicherung in Rom. (Oktober 1908). 14 pp., 8vo. 1909	The Author
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Whetham (*W. C. D.* and *C. D.*). The Family and the Nation. A study in natural inheritance and social responsibility. 8vo. 1909	Messrs. Longmans, Green and Co.
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Institution of Civil Engineers. Minutes of Proceedings. Vol. 177. 8vo. 1909	The Institute
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Biometrika. Vol. vii. Parts 1 and 2. July and October. 1909	Purchased
The Empire Review and Magazine. Vol. 18. No. 106. November, 1909. 8vo. 1909	The Editor
The Nineteenth Century and after, for September and October, 1909. 8vo. 1909	Purchased
Investors' Shilling Year-book for 1910, with preface by Sir Henry Kimber, Bart., M.P. 8vo. 1909	The Editor, Financial Review of Reviews
Official Year-book of the Scientific and Learned Societies of Great Britain and Ireland. 26th annual issue. 8vo. 1909	Purchased
South Wales Coal Annual for 1909-10. Edited by Joseph Davies. 8vo. 1909	The Statistical Publishing Co.
Wesleyan Methodist Kalendar and Daily Remembrancer for 1910. 8vo. 1909	The Rev. John Telford, B.A.
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Mosely Industrial Commission to the United States of America, October-December, 1902. Reports of the Delegates. 279 pp., sm. 4to. 1903	
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Women's Industrial Council. (1) Working Women and the Poor Law. By Miss B. L. Hutshins. (2) Newspaper and Citizenship Classes, and how to hold them, with specimen lessons. 2 pamphlets, 8vo. 1909	Purchased
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Consular Reports—From United States and United Kingdom.

Labour Reports, &c.—From Austria-Hungary, Belgium, France, Germany, United States, Massachusetts and New York States, Canada, New Zealand, and United Kingdom.

Trade Returns—From Argentina, Austria-Hungary, Belgium, Bulgaria, China, Egypt, France, Germany, Greece, Italy, Mexico, Netherlands, Roumania, Russia, Spain, Sweden, Switzerland, United States, India, Australia, and United Kingdom.

Vital Statistics—From Argentina, Egypt, Germany, Italy, Netherlands, Roumania, Switzerland, United States (California, Connecticut, and Michigan only), Queensland, South Australia, and United Kingdom.

Vital Statistics of following Towns—Buenos Ayres, Buda-Pesth, Brünn, Prague, Brussels, Copenhagen, Berlin, Bucharest, Moscow, Madrid, Stockholm, London, Manchester, Dublin, Edinburgh, and Aberdeen.

The weekly, monthly, or quarterly issues of the following periodicals, &c., have also been received during the past quarter. They are arranged under the names of the countries in which they are published:—

Denmark—Nationalökonomisk Tidsskrift.

France—Annales des Sciences Politiques. Économiste Français. Journal des Économistes. Monde Économique. Polybiblion, Parties Littéraire et Technique. Réforme Sociale. Le Rentier. Revue d'Économie Politique. Revue de Statistique. Journal de la Société de Statistique de Paris.

Germany—Allgemeines Statistisches Archiv. Archiv für Rassen- und Gesellschafts-Biologie. Archiv für Sozialwissenschaft und Sozialpolitik. Jahrbuch für Gesetzgebung, Verwaltung, und Volkswirtschaft. Jahrbücher für Nationalökonomie und Statistik. Kritische Blätter für die gesamten Socialwissenschaften. Zeitschrift für die gesamte Staatswissenschaft. Zeitschrift für die gesamte Versicherungs-Wissenschaft. Zeitschrift für Socialwissenschaft. Mittheilungen aus der Handelskammer Frankfurt a. M.

Italy—L'Economista. Giornale degli Economisti. Rivista Italiana di Sociologia. Riforma Sociale. Società Umanitaria, Bollettino mensile.

Sweden—Ekonomisk Tidskrift.

Switzerland—Journal de Statistique suisse.

United States—Bankers' Magazine. Bradstreet's. Commercial and Financial Chronicle, with supplements. Duns' Review. Journal of Political Economy. Political Science Quarterly. Quarterly Journal of Economics. Yale Review. American Academy of Political and Social Science, Annals. American Economic Association, Publications. American Geographical Society, Bulletin. American Statistical Association, Quarterly Publications. American Philosophical Society, Proceedings and Transactions. Columbia University, Studies in History, &c.

Canada—British Columbia Mining Record. Canadian Life and Resources.

India—Indian Engineering.

New Zealand—Government Insurance Recorder. Trade Review and Price Current.

United Kingdom—The Accountant. Accountants' Magazine. Agricultural Economist. Athenæum. Australian Trading World. Bankers' Magazine. Broomhalls' Corn Trade News. Browne's Export List. Colliery Guardian. Commercial World. Economic Journal. Economic Review. Economist. Farm and Garden. Financial Review of Reviews. Fireman. Illuminating Engineer. Incorporated Accountants' Journal. Insurance Record. Investors' Monthly Manual. Investors' Review. Joint Stock Companies' Journal. Labour Co-partnership. Licensing World. Machinery Market. Nature. Navy League, Journal. Policy-Holder. Post Magazine. Public Health. Publishers' Circular. Sanitary Record. Shipping World. Statist. The Times. Anthropological Institute, Journal. Cobden Club, Leaflets. East India Association, Journal. Howard Association, Leaflets, &c. Institute of Actuaries, Journal. Institute of Bankers, Journal. Institution of Civil Engineers, Minutes of Proceedings. Iron and Steel Institute, Journal. Lloyd's Register of British and Foreign Shipping, Statistical Tables. London Chamber of Commerce, Journal. London University Gazette. Manchester Literary and Philosophical Society, Memoirs and Proceedings. Royal Agricultural Society, Journal. Royal Colonial Institute, Proceedings and Journal. Royal Geographical Society, Geographical Journal. Royal Irish Academy, Proceedings and Transactions. Royal Meteorological Society, Meteorological Record and Quarterly Journal. Royal Society, Proceedings. Royal United Service Institution, Journal. Sanitary Institute, Journal. Society of Arts, Journal. Statistical and Social Inquiry Society of Ireland, Journal. Surveyors' Institution, Professional Notes and Transactions. Trade Circulars.

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APPENDIX.

ROYAL STATISTICAL SOCIETY.

(Founded 1834. Incorporated 1887.)

9, ADELPHI TERRACE,
STRAND, W.C., LONDON.

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1909.

ROYAL STATISTICAL SOCIETY.

Patron.

HIS MOST GRACIOUS MAJESTY THE KING.

Honorary President.

H.R.H. THE PRINCE OF WALES, K.G.

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(*having filled the Office of President*).

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NOTICES TO FELLOWS.

December, 1909.

The Council desire to call the attention of the Fellows to the fact that notwithstanding the change in the name of the Society by the addition of the word "Royal," they are still, in using letters after their names, signifying the membership of the Society, only entitled under Rule 6, to use the letters F.S.S.

Annual Subscriptions are due in advance, on the 1st of January in each year. A Form for authorising a Banker or Agent to pay the subscription Annually will be forwarded on application to the Assistant Secretary. When convenient, this mode of payment is recommended. Drafts should be made payable to the order of "The Royal Statistical Society," and crossed "*Drummond and Co.*"

In order to be included in the Ballot at any particular Ordinary Meeting, the nomination papers of candidates for Fellowship should be lodged at the Office of the Society at least six days before the date of such Meeting.

Fellows wishing to receive special and separate notices of papers to be read before the Society at the Ordinary Meetings should communicate with the Assistant Secretary.

The Ordinary Meetings of the Society are held at 5 p.m., in most case at **The Society's Rooms**, 9, Adelphi Terrace, Strand, W.C.

Particulars as to Papers to be read, and the time and place of meeting, will be found advertised in "The Times" and in other London daily papers on the Saturday preceding the date of each meeting. The attention of Fellows is particularly directed to these announcements.

After the present calendar year, the *Journal* will be issued in eight parts yearly, the first issue being on 15th January, 1910. Copies of the current issues will be delivered carriage free as heretofore to all Fellows of the Society. The price of each part will be 2*s.* 6*d.* to the general public, and the subscription, including postage, one guinea per annum. Addressees who fail to receive the *Journal* at the proper time are requested to communicate with the Assistant Secretary without delay.

The Library and the Reading Room are open daily for the use of Fellows from 10 a.m. to 5 p.m., excepting on Saturdays, when they are closed at 2 p.m. During October to June the Library and Reading Room are open as follows:—Monday to Friday, 10 a.m. to 7 p.m.; Saturday, 10 a.m. to 2 p.m. (public holidays excepted).

It is requested that any change of address may be notified promptly to the ASSISTANT SECRETARY.

CALENDAR FOR THE SESSION 1909-10.

1909	MON.	TUES.	WED.	THURS.	FRI.	SATUR.	SUN.
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THE ANNUAL GENERAL MEETING

Will be held on Tuesday, the 21st June, 1910, at the Society's Rooms.

Programme of the Session 1909-10.

THE

ORDINARY MEETINGS

WILL BE HELD MONTHLY FROM NOVEMBER TO JUNE,

IN MOST CASES AT THE SOCIETY'S ROOMS,

9, Adelphi Terrace, Strand, W.C., London.

The Chair will be taken at **5 p.m.** *on the following dates:—*

Tuesday, January 18.
,, February 15.
,, March 15.
Tuesday, April 19.
,, May 24.
,, June 21.

The following Papers have been read this Session:—

Presidential Address, entitled "The Recent Growth of Population in Western Europe; an Essay in International Comparison." (Delivered on 16th November, in the Theatre of the Royal United Service Institution, Whitehall, S.W.) By SIR J. ATHELSTANE BAINES, C.S.I.

"A Note on the Representation of Examination Results in Two or Three Dimensions." By W. GARNETT, M.A., D.C.L.

"Notes on International Statistical Comparisons." By A. D. WEBB, B.Sc.

"On the Distribution of Deaths with Age, when the Causes of Death Act Cumulatively, and Similar Frequency Distributions." By G. UDNY YULE.

The following Papers have been offered; and from these and any others that may be offered, a selection will be made by the Council:—

"English Railway Statistics." By WILLIAM M. ACWORTH, M.A.

"Comparative Distribution of Agricultural Holdings." By Major P. G. CRAIGIE, C.B.

"Infantile Mortality." By R. DUDFIELD, M.A., M.B.

"Vital Statistics of Towns in Germany and Great Britain." By A. W. FLUX, M.A.

"Fertility in Man." By DAVID HERON, M.A.

"German Finance." By WYNNARD HOOPER.

"Suggested Lines of Advance in English Vital Statistics." By T. H. C. STEVENSON, M.D.

"Wages in the Cotton Trade." By G. H. WOOD.

OUTLINE OF THE OBJECTS OF THE SOCIETY.

THE *Royal Statistical Society* was founded on the 15th of March, 1834, in pursuance of a recommendation of the British Association for the Advancement of Science, its objects being the careful collection, arrangement, discussion and publication of facts bearing on and illustrating the complex relations of modern society in its social, economical and political aspects, especially facts which can be stated numerically and arranged in tables; and also, the formation of a Statistical Library as rapidly as its funds would permit.

From its inception the Society has steadily progressed. It now possesses a valuable Library of about 50,000 volumes, and reading rooms. Monthly meetings are held from November to June, which are well attended, and cultivate among its Fellows an active spirit of investigation. The Papers read at these meetings, with an abstract of the discussions thereon, are published in the *Journal*, which now consists of seventy-two annual volumes, and forms of itself a valuable library of reference.

The Society has originated and statistically conducted many special inquiries on subjects of economic or social interest, of which the results have been published in the *Journal*, or issued separately.

To enable the Society to extend its sphere of useful activity and accomplish in a yet greater degree the various ends indicated, an increase in its numbers and revenue is desirable. With the desired increase in the number of Fellows, the Society will be enabled to publish standard works on Economic Science and Statistics, especially such as are out of print or scarce, and also greatly extend its collection of foreign works. Such a well-arranged Library for reference as would result does not at present exist in England, and is obviously a great *desideratum*.

The Society is cosmopolitan, and consists of Fellows and Honorary Fellows, together forming at the present time a body of about *nine hundred* Members.

The annual subscription to the Society is *Two Guineas*, and at present there is no entrance fee. Fellows may, on joining the Society or afterwards, compound for all future annual subscriptions by a payment of *Twenty Guineas*.

The Fellows of the Society receive gratuitously a copy of each part of the *Journal* as published, and have the privilege of purchasing back numbers at a reduced rate. The Library (reference and circulating) and the Reading Rooms are open daily for the convenience of Members.

Nomination Forms, with any further information, will be furnished, on application to the *Assistant Secretary, Royal Statistical Society*, 9, *Adelphi Terrace, Strand*, *W.C.*, *London.*

LIST OF PUBLICATIONS.

Note.—Sets or separate numbers of the *Journal*, or of the other publications of the Society (if not out of print), may be obtained at the Offices of the Society, or through any bookseller. Fellows may purchase these publications at a reduced rate.

	Price.
Journal (published quarterly)— Vols. 1—72. 8vo. 1838-1909	5*s.* each part*
General Analytical Index to Vols. 1—71 of the Journal (1838-1908). In 5 parts. 8vo.—	
(i) Vols. 1—15 (1838-52)	7*s.* 6*d.*
(ii) Vols. 16—25 (1853-62)	3*s.* 6*d.*
(iii) Vols. 26—35 (1863-72)	3*s.* 6*d.*
(iv) Vols. 36—50 (1873-87)	3*s.* 6*d.*
(v) Vols. 51—71 (1888-1908)	3*s.* 6*d.*
Subject-Index to the Journal, Vols. 28—57, 1865-94	1*s.* 6*d.*
Reports of the Committee appointed 20th November, 1900, to inquire into the statistics available as a basis for estimating the production and consumption of meat and milk in United Kingdom; with observations by Mr. R. H. Rew. 8vo. 1904	1*s.*
Catalogue of the Library— 573 pp. Cloth, super royal 8vo. 1884	10*s.*
Index to the Catalogue of 1884— 372 pp. Cloth, super royal 8vo. 1886	10*s.*
Catalogue of the Library— 276 pp. Cloth, 8vo. 1908	10*s.* 6*d.*
Jubilee Volume— xv + 372 pp. Cloth, 8vo. 1885	10*s.* 6*d.*

List of Fellows, containing the Rules and Bye-Laws of the Society, and corrected annually to 31st December, are issued gratuitously.

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* Before 1870 the price varied.

LIST
OF THE
Society's Guy Medallists,
With the Date of the Awards.

Medals in GOLD *have been awarded as follows*—

1892. The Rt. Hon. CHARLES BOOTH, F.R.S.
1894. Sir ROBERT GIFFEN, F.R.S.
1900. Sir J. ATHELSTANE BAINES, C.S.I.
1907. Prof. F. Y. EDGEWORTH, D.C.L.
1908. Major P. G. CRAIGIE, C.B.

Medals in SILVER *have been awarded as follows*—

NAME.	TITLE OF PAPER.
1893. Sir JOHN GLOVER.	**Tonnage Statistics of the Decade,* 1880–1890.
1894. Mr. A. SAUERBECK.	*Prices of Commodities during the last Seven Years.*
1895. Mr. A. L. BOWLEY, M.A.	*Changes in Average Wages (Nominal and Real) in the United Kingdom between* 1860 *and* 1891.
1897. Mr. FRED. J. ATKINSON.	*Silver Prices in India.*
1899. Professor CHARLES S. LOCH, D.C.L.	*Poor Relief in Scotland: its Statistics and Development,* 1791–1891.
1900. Mr. R. F. CRAWFORD.	*Notes on the Food Supply of the United Kingdom, Belgium, France, and Germany.*
1901. Mr. T. A. WELTON, F.C.A.	*Distribution of Population in England and Wales in the Period of Ninety Years from* 1801 *to* 1891.
1902. Mr. R. H. HOOKER, M.A.	*Suspension of the Berlin Produce Exchange, and its effect on Corn Prices.*
1903. M. YVES GUYOT.	*The Sugar Industry on the Continent.*
1904. Mr. D. A. THOMAS, M.P.	*The Growth and Direction of our Foreign Trade in Coal during the last Half Century.*
1905. Mr. R. H. REW.	*Reports of the Committee on Meat and Milk Production.*
1906. Dr. W. N. SHAW, F.R.S.	*Seasons in the British Isles from* 1878.
1907. Mr. NOEL A. HUMPHREYS, I.S.O.	*The Alleged Increase of Insanity.*
1909. Sir EDWARD W. BRABROOK, C.B.	*Social Insurance.*

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* This paper was one of a series which now contains five decennial reviews.

LIST
OF THE
Society's Howard Medallists.

NAME.	SUBJECT OF COMPETITION.
1875. Mr. EDWARD SMITH.	*Influence of improved Dwellings of the Poor in Rural Districts of England.*
1876. Dr. J. C. STEELE.	*Past and Present Mortality of Hospitals in the United Kingdom.*
1878. Dr. JOHN MARTIN and Captain H. HILDYARD (*extra Prize*).	*Effects of Health and Disease on Military and Naval Operations.*
1879. Miss B. JOURDAN.	*Improvements in Education of Children in Eighteenth and Nineteenth Centuries.*
1880. Mr. H. P. POTTER.	*The Oriental Plague, and Howard's Labours on the subject.*
1881. Dr. F. POLLARD.	*On the Jail Fever, from the earliest Black Assize to the latest Outbreak.*
1882. Mr. D. MANSON FRASER.	*State of English Prisons in the Eighteenth Century, and its relation to Small-Pox.*
1883. Dr. R. D. R. SWEETING.	*John Howard on Health of Inmates of Prisons, Workhouses, and other Public Institutions.*
1884. Dr. CLEMENT DUKES.	*Howard's Opinions on the Preservation of Health as affected by Personal Habits.*
1893. Dr. HUGH R. JONES.	*Perils and Protection of Infant Life.*
1895. Mr. JOHN WATSON.	*Reformatory and Industrial Schools.*
1897. Dr. JAMES KERR.	*School Hygiene.*
1899. Miss ROSA M. BARRETT.	*Sentences on, and Punishments of, Juvenile Offenders in Europe and the United States.*
1900. Dr. J. F. J. SYKES.	*Housing of the Working Classes in London and other large Towns.*
1904. Mr. LEONARD WARD.	*Effects of State Regulation of Dangerous Trades on Health of Workers.*
1908. Mr. PERCY E. BRAUN, B.Sc.	*The Cost, Conditions and Results of Hospital Relief in London.*

NOTICE.—The subject appointed for the next "Howard Medal" Essay Competition (Session 1910-11) is: **"A Statistical Review of the Variations during the last Twenty Years in the Consumption of Intoxicating Drinks in the United Kingdom, and in Convictions for Offences connected with Intoxication; with a Discussion of the Causes to which these Variations may be ascribed."** The competition is open to the public, and a statement of the conditions may be obtained from the Assistant Secretary.

ROYAL STATISTICAL SOCIETY.

Each Fellow is entitled to receive one copy of each part of the Society's "JOURNAL," as published, forming in the course of the year a volume of about 800 pages. Fellows may obtain additional copies, and copies of back issues (with certain exceptions) at three shillings each.

The Society's LIBRARY comprises about 50,000 volumes, including the most important statistical publications, serial and other, of British or foreign Governments, as well as a large collection of general statistical and economic works. A copy of the Catalogue, published in 1908, is obtainable by each Fellow free of cost. The Reading Rooms are open daily for the use of Fellows from 10 a.m. to 5 p.m. (Saturdays 10 a.m. to 2 p.m.). During the months of October to June, the Library and Reading Room will be open as follows:—Monday to Friday, 10 a.m. to 7 p.m. Saturday, 10 a.m. to 2 p.m. (Public holidays excepted). Fellows may also, under the regulations, borrow books up to the number of ten at a time.

Fellows wishing to receive special and separate notices of each paper to be read before the Society at the Ordinary Meetings should communicate with the Assistant Secretary.

FELLOWSHIP is attained by election.

CANDIDATES must be proposed and seconded by Fellows of the Society, who, either from personal or general knowledge, vouch for the Candidate's qualification and eligibility. On the nomination of the Council, Candidates may be elected as Fellows by a Ballot taken at any Ordinary Meeting of the Society.

There is at present no entrance fee and the SUBSCRIPTION is TWO GUINEAS per annum.

In lieu of the annual subscription, a COMPOSITION of twenty guineas is accepted.

Further particulars, Lists of Fellows, Copies of the Rules, &c., may be obtained on application to THE ASSISTANT SECRETARY, ROYAL STATISTICAL SOCIETY, 9, Adelphi Terrace, Strand, W.C., London.

ROYAL STATISTICAL SOCIETY.

Founded 15*th March*, 1834, *Incorporated* 31*st January*, 1887.

LIST OF THE FORMER

Patrons and Presidents of the Society.

Patrons.

	Period.
His Royal Highness The Prince Consort, K.G.	1840–61
His Most Gracious Majesty The King	1901

Honorary Presidents.

H.R.H. Albert Edward Prince of Wales, K.G.	1872–1901
H.R.H. George Prince of Wales, K.G.	1902

Presidents.

The Most Noble The Marquis of Lansdowne, K.G., F.R.S.	1834–36
Sir Charles Lemon, Bart., M.P., LL.D., F.R.S.	1836–38
The Rt. Hon. The Earl Fitzwilliam, F.R.S.	1838–40
The Rt. Hon. The Visct. Sandon, M.P. (afterwards Earl of Harrowby)	1840–42
The Most Noble The Marquis of Lansdowne, K.G., F.R.S.	1842–43
The Rt. Hon. The Visct. Ashley, M.P. (afterwards Earl of Shaftesbury)	1843–45
The Rt. Hon. The Lord Monteagle	1845–47
The Rt. Hon. The Earl Fitzwilliam, F.R.S.	1847–49
The Rt. Hon. The Earl of Harrowby, K.G., D.C.L.	1849–51
The Rt. Hon. The Lord Overstone	1851–53
The Rt. Hon. The Earl Fitzwilliam, K.G., F.R.S.	1853–55
The Rt. Hon. The Earl of Harrowby, K.G., D.C.L.	1855–57
The Rt. Hon. The Lord Stanley, M.P. (afterwards Earl of Derby)	1857–59
The Rt. Hon. The Lord John Russell, M.P., F.R.S. (afterwards Earl Russell)	1859–61
The Rt. Hon. Sir John S. Pakington, Bart., M.P., G.C.B. (afterwards Lord Hampton, G.C.B.)	1861–63
Colonel W. H. Sykes, M.P., D.C.L., F.R.S.	1863–65
The Rt. Hon. The Lord Houghton, D.C.L., F.R.S.	1865–67
The Rt. Hon. W. E. Gladstone, M.P., D.C.L.	1867–69
William Newmarch, F.R.S., Corr. Mem. Inst. of France	1869–71
William Farr, M.D., C.B., D.C.L., F.R.S.	1871–73
William A. Guy, M.B., F.R.S.	1873–75
James Heywood, M.A., F.R.S., F.G.S.	1875–77
George J. Shaw Lefevre, M.P. (now Lord Eversley)	1877–79
Thomas Brassey, M.P. (now Lord Brassey)	1879–80
The Rt. Hon. Sir James Caird, K.C.B., F.R.S.	1880–82
Sir Robert Giffen, K.C.B., LL.D., F.R.S.	1882–84
Sir Rawson W. Rawson, K.C.M.G., C.B.	1884–86
The Rt. Hon. George J. Goschen, M.P., F.R.S. (afterwards Viscount Goschen)	1886–88
T. Graham Balfour, M.D., F.R.S.	1888–90
Frederic J. Mouat, M.D., LL.D., F.R.C.S.	1890–92
The Rt. Hon. Charles Booth	1892–94
The Rt. Hon. The Lord Farrer	1894–96
John Biddulph Martin, M.A.	1896–97
Sir Alfred Edmund Bateman, K.C.M.G.	1897
The Rt. Hon. Leonard H. Courtney, M.P. (now Lord Courtney)	1897–99
The Rt. Hon. Sir Henry H. Fowler, G.C.S.I., M.P. (now Viscount Wolverhampton)	1899–1900
The Rt. Hon. Lord Avebury, D.C.L., LL.D., F.R.S.	1900–02
Major Patrick George Craigie, C.B.	1902–04
Sir Francis Sharp Powell, Bart., M.P.	1904–05
The Rt. Hon. The Earl of Onslow, G.C.M.G.	1905–06
Sir Richard Biddulph Martin, Bart.	1906–07
The Rt. Hon. Sir Charles W. Dilke, Bart., M.P.	1907–09

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LIST OF FELLOWS.

The names of Present Members of Council are printed in Small Capitals.
Those marked *c* have Served or are Serving on the Council.
,, *d* have made Presentations to the Library.
,, *p* have contributed Papers to the Society.
,, * have compounded for their Annual Subscriptions.

Year of Election.		
1904	*d*	*à Ababrelton, Robert, F.R.G.S., 161, *Sixth-avenue, Little Ilford, Essex.*
1907		*à Ababrelton, Robert R. de R., F.R.E.S., *Registry and Record Dept., India Office, S.W.*
1906		Abrahams, E. Goldsmid, *Albany Courtyard, Piccadilly, W.*
1888		Ackland, Thomas G., F.I.A. (5 *and* 6, *Clement's Inn*), *The Thatched House, Muswell-hill, Highgate, N.*
1888	*c d p*	Acland, The Right Hon. A. H. Dyke, M.A., *Dunkery House, Felixstowe.*
1892	*c d p*	ACWORTH, WILLIAM M., M.A., *The Albany, Piccadilly, W.*
1905	*d p*	Adams, W. G. S., M.A., *Dept. of Agri. and Tech. Instruction, Dublin.*
1902	*d*	Adeane, Charles R. W., *Babraham Hall, near Cambridge.*
1884		Agius, Edward T., 3, *Belsize-grove, N.W.*
1888		*Airedale, Rt. Hon. Lord, *Gledhow Hall, Leeds.*
1879		Akers-Douglas, The Right Hon. Aretas, M.P., *Chilston-park, Maidstone, Kent.*
1908		Alexander, Charles S., *Taipeng, Perak, Federated Malay States.*

Year of Election.		
1896		Allen, George B., *Free Chase, Warminglid, Hayward's Heath.*
1908		Allen, H. C., *Buenos Ayres Gt. Southern Rly. Co., Ltd., River Plate House, Finsbury Circus, E.C.*
1898		Allen, William H., *Bromham House, Bromham, near Bedford.*
1880		*Allerton, The Right Hon. Lord, *Chapelallerton, Leeds.*
1893	*d*	Anderson, Herbert W., C.E., *S.W. Laboratory*, 43, *St. James's-rd., Kingston.*
1889		Anderson, John A., *Faversham, Kent.*
1907	*d*	Andersson, Thor E. E., Ph.D. *Regeringsgaten 111., Stockholm.*
1886		Andras, Henry W., F.I.A., 50, *Regent-street, W.*
1871		Angus, R. B., *Montreal, Canada.*
1897		Anning, Edward H., F.R.G.S., 78, *Cheapside, E.C.*
1884		Anning, Edward J. 78, *Cheapside, E.C.*
1906		Archer, Walter E., 17, *Sloane-court, S.W.*
1872		*Archibald, William F. A., M.A., 114, *Royal Courts of Justice, Strand, W.C.*
1892	*d*	Argyle, Jesse, "*Holmdale*," 6, *Northolme-rd., Highbury-pk., N.*
1906		Arkell, George E., 107, *Ivanhoe-road, Denmark-park, S.E.*
1888		Asch, William, 7, *Lothbury, E.C.*
1908		Ashley, Percy W. L., *Board of Trade, Gwydyr House, Whitehall, S.W.*
1909	*c d*	ASKWITH, GEORGE R., K.C., C.B., 7, *Whitehall-gardens, S.W.*
1909		Astor, Waldorf, *Astor Estate Office, Victoria-embankment, W.C.*
1888	*d*	Atkinson, Charles, 56, *Palewell-park, East Sheen.*
1893	*d p*	Atkinson, Frederic J., *c/o Messrs. Henry S. King & Co.*, 9, *Pall Mall, S.W.*
1865	*c d p*	AVEBURY, RIGHT HON. LORD, F.R.S. (*Honorary Vice-President*), *High Elms, Farnbro', R.S.O., Kent.*
1904		Avery, John, F.C.A., 23, *St. Swithin's-lane, E.C.*
1893		*Aves, Ernest, M.A., *Lower Birtley, Witley, Surrey.*

Year of Election.		
1872	*c d*	*Babbage, Major-General Henry P., *Mayfield, Lansdown, Cheltenham.*
1892		Bacon, George W., F.R.G.S., 127, *Strand, W.C.*
1909		*Bagnall, Bernard T. S., A.C.A., *Myrtleville, Tavistock-road, Plymouth.*
1855	*c d*	BAILEY, ARTHUR H., F.I.A., 26, *Mount Ephraim-road, Streatham, S.W.*
1908		Bailey, Frederick, "*Lesma,*" *Queen's-road, Springfield, Chelmsford.*
1907		Bailey, Walter, *The Gobbins, Burton-road, Derby.*
1881	*c d p*	BAINES, SIR J. ATHELSTANE, C.S.I. (*President*), *Kidlington, Oxon.*
1906	*p*	Baldwin-Wiseman, William R., M.Sc., A.M. Inst. C.E., 165, *Shirley-road, Southampton.*
1878		Balfour, The Right Hon. Arthur J., M.P., F.R.S., 4, *Carlton-gardens, S.W.*
1886		Balfour, The Right Hon. Gerald W., *Fishers-hill, Woking.*
1907		Balleine, Arthur E., 4, *Whitehall-place, S.W.*
1903	*d*	Bamber, Lieut.-Col. Charles J., D.P.H., *Sanitary Comm. to Gov. of the Punjab, Lahore.*
1904	*d*	Banaji, Khoshru N., "*The Commercial Studio,*" *Baroda, Bombay Presy.*
1887		Barnes, Joseph H., F.I.A., 19, *Lombard-street, E.C.*
1885		Barratt, Thomas J., *Bell-Moor, Hampstead Heath, N.W.*
1887		*Barrett, Thomas S., F.Z.S., M.A.I., &c., *Rose Cottage, Millfield-road, Widnes.*
1888		*Bartlett, Frederick W., *Paymaster General's Office, Whitehall, S.W.*
1907	*d*	Bassett, Herbert H., "*Darentlea,*" *Eynsford, Kent.*
1889	*d*	Bastable, Professor C. F., M.A., LL.D., 52, *Brighton-road, Rathgar, Dublin.*
1877	*c d p*	BATEMAN, SIR ALFRED E., K.C.M.G. (*Hon. Vice-President*), *Woodhouse, Wimbledon-park, S.W.*

Year of Election.		
1877		Bayfield, Arthur, 95, *Colmore-row, Birmingham.*
1873		*Baynes, Alfred H., F.R.G.S., 19, *Furnival-street, Holborn, E.C.*
1905		Beaven, Edwin S., *Eastway, Warminster.*
1882	*d*	*Beazeley, Michael W., M.A., *Worting, Basingstoke.*
1882	*c d*	*Beeton, Henry R., 9, *Maresfield-gardens, Hampstead, N.W.*
1899	*d*	Beeton, Mayson M., B.A.,
1886	*d*	Begg, Ferdinand F., *Bartholomew House, E.C.*
1884	*d*	Bell, James T., 330, *Mansfield-road, Nottingham*
1901		Bellingham, Archer. *Walcot, Burghley-road, Wimbledon.*
1908	*d*	*Bellom, Professor Maurice, 6, *rue Daubigny, Paris, XVII.*
1888		*Benson, Godfrey R., 108, *Eaton-square, S.W.*
1884		*Bentley, Richard, F.R.G.S., *Upton, Slough. Bucks.*
1907		Bernard, Major Francis T. H., *Chearsley Hall, Aylesbury.*
1890		Berry. Arthur, M.A., *King's College, Cambridge.*
1891		Berry, Oscar, C.C., F.C.A., *Monument House, Monument-square, E.C.*
1909		Beveridge, William H., *Board of Trade, Gwydyr House, Whitehall, S.W.*
1869	*p*	*Beverley, The Hon. Mr. Justice Henry, *Nascot Lodge, Watford.*
1888		Billinghurst, Henry F., 7, *Oakcroft-road, Blackheath, S.E.*
1899	*c*	Birchenough, Henry, C.M.G., M.A., 79, *Eccleston-square, S.W.*
1901		Bird, Harry, C.C., *Strathmore, Chingford, Essex.*
1881	*d*	Bishop, George, 113, *Powis-street, Woolwich.*
1902		Bisset-Smith, George T., 55, *Carlton-place, Aberdeen.*
1898		Blount, Edward T. J., F.F.A., A.I.A., *Standard Life Insurance Co.,* 3, *George-street, Edinburgh.*
1898	*c d*	*Blyth, Rt. Hon. Lord, *Stansted, Essex; and* 33, *Portland-place, W.*
1907		Boddy, Henry M., *Manufacturers Life Insurance Co., Rhodes Buildings, St. George's-street, Cape Town.*

Year of Election.		
1884	*d*	Boileau, Lieut.-Col. John Peter H., M.A., M.D., &c., *Trowbridge, Wilts.*
1881		Bolitho, Thomas R., *Trengwainton, Hea Moor, R.S.O., Cornwall.*
1890		Bolton, Edward, J.P., 325, *Anlaby-road, Hull.*
1885	*c d*	*Bonar, James, M.A., LL.D., *The Mint, Ottawa, Canada.*
1887	*c*	Bond, Edward, M.A. 43, *Thurloe-square, S.W.*
1905		*Bonn, Max J., 43, *Park-lane, W.*
1885	*c d p*	Booth, Rt. Hon. Charles, D.C.L., D.Sc., F.R.S. (*Hon. Vice-President*), 11, *Adelphi-terrace, Strand, W.C.*
1909		Bowers, F. Gatus, 12, *Elgin-road, Seven Kings, Essex.*
1894	*c d p*	Bowley, Arthur L., M.A., *Northcourt-avenue, Reading.*
1909		Boyd-Carpenter, Archibald, 22, *Park-avenue, Harrogate.*
1894	*c d p*	Brabrook, Sir Edward W., C.B., V.P.S.A. (*Vice-President*), 178, *Bedford-hill, Balham, S.W.*
1883		Braby, Frederick, F.C.S., F.G.S., *Bushey Lodge, Teddington.*
1900	*d p*	Branford, Victor V., M.A., *River Plate House*, 13, *South-place, E.C.*
1873	*c d p*	Brassey, The Right Hon. Lord, G.C.B. (*Honorary Vice-President*), 24, *Park-lane, W.*
1903	*d p*	Brassey, The Hon. Thomas A., *Park-gate, Battle.*
1907	*p*	Braun, Percy E., B.Sc., *London County Council, Spring Gardens, S.W.*
1864		*Braye, The Right Hon. Lord, *Stanford Hall, Market Harborough.*
1908	*d*	Bright, Charles, F.R.S.E., 26, *Devonshire-terrace, Hyde Park, W.*
1902	*d*	Broadbent, Albert, 257, *Deans Gate, Manchester.*
1906		Brook, Herbert E. J., *The Cottage, Hedon, East Yorks.*
1874		Broom, Andrew, A.C.A., *Eaglehurst, Staines, Middlesex.*
1895	*d*	Broomhall, George J. S., 17, *Goree Piazzas, Liverpool.*
1878		Brown, Sir Alexander H., Bart., 12, *Grosvenor-gardens, S.W.*
1901		Brown, B. Hal., *London & Lancs. Life Insurance Co., Montreal, Canada.*
1896		*Brown, Daniel M., *P.O. Box* 187, *Carra Linn, Port Elizabeth.*

Year of Election.		
1893		Brown, James W. B., F.S.A.A., *Prudential-buildings, Corporation-st., Birmingham.*
1903	*d*	Brown, S. Stanley, *Hamilton House, Victoria Embankment, E.C.*
1875	*p*	Browne, Thomas G. C., F.I.A., 11, *Lombard-street, E.C.*
1908		Brownlee, John, M.D., D.Sc., *Ruchill Fever Hospital, Glasgow.*
1886		*Brunner, The Rt. Hon. Sir John T., Bart., M.P., 9, *Ennismore-gardens, S.W.*
1909		Buchanan, Dr. James, M.A., D.Sc., F.F.A., F.I.A., 9, *St. Andrew-square, Edinburgh.*
1880	*c d p*	*Burdett, Sir Henry C., K.C.B., *The Lodge, Porchester-square, W.*
1884	*d*	Burdett-Coutts, William, M.P., 1, *Stratton-street, Piccadilly, W.*
1902		Burgess, James H., F.S.A.A., *Bergen House, St. Catherine's, Lincoln.*
1897		Burke, David, A.I.A., *Royal Victoria Life Insurance Co., Montreal.*
1905		Burns. Thomas R., 13, *Donegall-square-north, Belfast.*
1895		Burrup, J. Arthur E., *Custom House, Calcutta, India.*
1880		Burt, Frederick, F.R.G.S., *Pinewood, Stoke Poges, R.S.O. nr. Slough, Bucks.*
1901		Burt, George S., *The Lancashire Watch Co., Ltd., Prescot.*
1906		Bush, Joseph H., "*Varaville,*" *Cranbrook-road, Ilford.*
1892		Byworth, Charles J., F.S.A.A., *The Limes, Sutton Common-rd., Benhilton, Surrey.*
1902	*d*	Caillard, Sir Vincent H. P., 42, *Half Moon-street, W.*
1897		Cairnes, Frederick E., *Killester House, Raheny, Co. Dublin.*
1903		Caldwell, William, 162, *Bath-street, Glasgow.*

Year of Election.		
1896		Campbell, Charles W., C.M.G., *British Legation, Pekin, China.*
1905	*d*	Campbell, Richardson, 37, *Lansdowne-road, Crumpsall, Manchester.*
1879		Campbell-Colquhoun, Rev. John E., *Chartwell, Westerham, Kent.*
1889	*d p*	Cannan, Edwin, M.A., LL.D., 46, *Wellington-square, Oxford.*
1891	*d*	Cannon, Henry W., *Chase National Bank,* 83, *Cedar-street, New York, U.S.A.*
1900	*d*	Canovai, Commendatore Tito, *Bank of Italy, Rome.*
1904		Carrington, John B., F.S.A.A., 20, *Blomfield-road, Maida Vale, W.*
1890		*Carter, Eric M., A.I.A., F.C.A., 33, *Waterloo-street, Birmingham.*
1883	*d*	*Carter, Joseph R., *Courtfield, Ross-road, Wallington, Surrey.*
1881		Causton, Right Hon. Richard K., M.P., 12, *Devonshire-place, Portland-place, W.*
1907		*Chabot, Marius T., 94, *Haringvliet, Rotterdam, Holland.*
1884	*d*	*Chailley-Bert, Joseph, *Union Coloniale Française,* 44, *Chaussée d'Antin, Paris.*
1880	*d*	*Chamberlain, The Right Hon. Joseph, M.P., F.R.S., *Highbury, Moor Green, Birmingham.*
1901	*d p*	Chance, Sir William, Bart., J.P., *Orchards, near Godalming.*
1903		Channing, Sir Francis A., Bart., M.P., 40, *Eaton-place, S.W.*
1886	*d p*	*Chapman, Samuel, 225—228, *Gresham House, Old Broad-st., E.C.*
1903	*d p*	Chapman, Professor Sydney J., M.A., *Owens College, Manchester.*
1901	*d*	Chapman, Walter W., 4, *Mowbray House, Norfolk-street, Strand, W.C.*
1904		Charles, Thomas E., 52, *Sandrock-road, Lewisham, S.E.*
1892		*Chatham, James, F.I.A., F.F.A., 7, *Belgrave-crescent, Edinburgh.*
1903	*d*	Chiozza-Money, Leo G., M.P., "*Tyhurst,*" *Chaldon-by-Caterham, Surrey.*
1886	*c d p*	*Chisholm, George G., M.A., B.Sc., F.R.G.S., 12, *Hallhead-rd., Craigmillar Pk., Edinburgh.*
1906		Choles, Herbert J., *Dept. of Agriculture; Pietermaritzburg, Natal.*
1909		Clark, Albert Hawkins, A.M.I.C.E., 58, *Elmbourne-road, Tooting Common, S.W.*
1904		Clark, Archibald B., 160, *Braid-road, Edinburgh.*

Year of Election.		
1909		Clark, Charles C., *International Institute of Agriculture, Rome, Italy.*
1901	*c*	Clark, William H., C.M.G. (*Hon. Secretary*), *Treasury Chambers, Whitehall, S.W.*
1882	*c d*	*Clarke, Sir Ernest. 31, *Tavistock-square, W.C.*
1877	*c d*	*Clarke, Henry, L.R.C.P., *Courns Wood, Hughenden, High Wycombe.*
1890		Clarke, Henry, J.P., *Cannon Hall, Hampstead, N.W.*
1908		Clarke, John J., 48, *Laurel-road, Fairfield, Liverpool.*
1899		Claughton, Gilbert H., *The Priory, Dudley.*
1908		Clay, Sir Arthur T. F., Bart., 19, *Hyde Park Gate, S.W.*
1907		Cleaver, Edgar J., F.A.A., 34, *Dover-street, W.*
1907		Clements, Lieut.-Col. H. C., V.D., *Cheriton, Lismore-road, South Croydon.*
1893	*c d p*	COGHLAN, TIMOTHY A., I.S.O., 4, *Albert Gate-court*, 124, *Knightsbridge, W.*
1905		*Cohen, C. Waley, M.A., 11, *Hyde Park-terrace, W.*
1887	*c d*	Cohen, Nathaniel L., 11, *Hyde Park-terrace, W.*
1859		Coles, John, F.I.A., 4, *Kensington Park-gardens, W.*
1905		Coles, Richard J., F.C.I.S., *Addenbrooke's Hospital, Cambridge.*
1892	*d p*	*Collet, Miss Clara E., M.A., 43, *Parliament-street, S.W.*
1895		Collins, Howard J., *The General Hospital, Birmingham.*
1906		Collins, Percy, 81–83, *Cheapside, E.C.*
1882		*Collum. Rev. Hugh R., M.R.I.A., F.R.C.I., 35, *Oakley-street, Chelsea, S.W.*
1906		Contractor, Burjorjee Cawasjee, *New Markers Buildings, Apollo-street, Bombay.*
1903	*d*	Cook-Watson, Ralph, *Standard Chambers, Neville-st., Newcastle-on-T.*
1887		Cooke-Taylor, R. Whately, *High Trees, Chepstow.*
1888		*Cooke-Taylor, Theodore, M.P., J.P., *Sunny Bank, Batley, Yorkshire.*
1891	*d*	Cooper, Joseph, 23, *Rawson-street, Farnworth, near Bolton.*
1906		Cornish, George F., 23, *St. Stephen's-road, North Bow, E.*

Year of Election.		
1889		Cornwallis, Fiennes S. W., *Linton-park, Maidstone, Kent.*
1899	*d*	Court, Stephen E., 11, *Courtfield-gardens, S.W.*
1862	*c d p*	COURTNEY, RIGHT HON. LORD (*Hon. Vice-President*), 15, *Cheyne Walk, Chelsea, S.W.*
1902		*Coxon, William, 15, *Elsworthy-terrace, N.W.*
1907		Coyagi, Professor Jehangi,
1871	*d*	Cozens-Smith, Edward, 16, *Kensington-square, W.*
1874	*c d p*	CRAIGIE, MAJOR P. G., C.B. (*Hon. Vice-President*), *West Wellow, Romsey, Hampshire.*
1906		Craske, Harold, *Kyle Lodge, Letchworth, Herts.*
1902		Craven, Edward J. E.,
1890	*c d p*	Crawford, Richard F., *c/o F. R. Sneath, Esq.*,1, *New-court, Lincoln's Inn, W.C.*
1891		*Crawley, Charles E., *Lanhydrock Villa, Truro, Cornwall.*
1878		Crewdson, Ernest, *Grinstead, Green-lane, Buxton, Derbyshire.*
1892		Cripps, Sir C. Alfred, K.C.V.O., 1, *Essex-court, Temple, E.C.*
1890		Croal, David O., *Financial News*, 11, *Abchurch-lane, E.C.*
1907		Cromer, The Rt. Hon. The Earl of, O.M., G.C.B., G.C.M.G., K.C.S.I., 36, *Wimpole-street, W.*
1904		Crotch, W. Walter, 79, *Earlham-road, Norwich.*
1900		Crowley, Michael, F.C.A., F.S.A.A., 16, *College Green, Dublin.*
1905		Cruce, Frederick G. L., 27, *Chetwynd-road, Southsea.*
1883	*c d*	Cunningham, The Venble. Archdeacon, D.D., 2, *St. Paul's-road, Cambridge.*
1879	*d*	Curtis, Robert L., F.S.I., J.P., 11—12, *Finsbury-square, E.C.*
1900		Dale, Charles E., F.S.A.A., *Old Calabar, West Africa.*

Year of Election.			
1888			Dangerfield, Athelstan, F.C.A., 56, *Cannon-street, E.C.*
1898	*d*		*Danson, Francis C., *Tower Buildings, Water-street, Liverpool.*
1901	*d*		Danvers, Ernest, F.R.G.S., 475, *B. Mitre, Buenos Ayres.*
1909			Darton, Oscar, F.C.A., 10, *Old Jewry Chambers, London, E.C.*
1897	*d*	*p*	*Darwin, Major Leonard, R.E., F.R.G.S., 12, *Egerton-place, S.W.*
1905			Daugherty, Charles M., *Bureau of Statistics, Dept. of Agriculture, Washington, D.C., U.S.A.*
1901	*d*		Davar, Sohrab R., M.S.A., 53, *Esplanade-road, Fort, Bombay.*
1901			Davies, Dixon H., *Great Central Ry., Marylebone Station, N.W.*
1869			Davies, James M., 168, *St. Vincent-street. Glasgow.*
1888			Dawson, G. J. Crosbie, M. Inst. C.E., F.G.S., *May-place, Newcastle, Staffs.*
1899			Dawson, Miles M., F.A.S., F.I.A., 76, *William-street, New York, U.S.A.*
1903	*d*		Dawson, Sidney S., F.C.A., F.C.I.S. 51, *North John-street, Liverpool.*
1880			Debenham, Frank, 1, *Fitzjohn's-avenue, Hampstead, N.W.*
1885	*d*		De Broë, Emile C. De Bichin, *Walden Lodge, Carlisle-road, Eastbourne.*
1900	*d*		De la Plaza, Victorino, LL.D. (*Buenos Ayres Ry. Co.*), *Poste Restante, Buenos Ayres.*
1907			Denman, Hon. Richard D., 9, *Swan-walk, Chelsea, S.W.*
1891			Denne, William, *Phillimore, Wetherill-road, New Southgate, N.*
1873			Dent, Edward, 2, *Carlos-place, Grosvenor-square, W.*
1887			Dent, George M., 20, *Park-avenue, Southport.*
1889			De Rothschild, Leopold, D.L., 5, *Hamilton-place, Piccadilly, W.*
1892			De Smidt, Henry, C.M.G., *Norham House, Belvedere-rd., Claremont, S.A.*
1909			De Than, M. Albin, 21, *St. James's-street, S.W.*
1906			De Vine, John M., *Royal National Hospital for Consumption, Ventnor, Isle of Wight.*
1892			Dewar, William N., *Standard Life Assurance Co.,* 28. *Elizabeth-street, Sydney, N.S.W.*
1900			Dewsnup, Professor Ernest R., M.A., F.R.G.S., *University of Illinois, Urbana, Ill., U.S.A.*

Year of Election.		
1906	*d*	*Dick, Godfrey W., A.I.A.N., 197, *Stamford Hill-road, Durban, Natal.*
1908		Dickson, Professor Henry N., M.A., D.Sc., F.R.S.E., *The Lawn, Upper Redlands-road, Reading.*
1903		Digby, W. Pollard, 28, *Victoria-street, S.W.*
1866	*c d p*	*DILKE, THE RIGHT HON. SIR CHARLES W., BART., M.P. (*Hon. Vice-President*), 76, *Sloane-st., S.W.*
1899	*d*	Dougharty, Harold, A.I.A., F.C.I.S., 91, *Gleneagle-road, Streatham, S.W.*
1894	*c d p*	Drage, Geoffrey, M.A., 29, *Cadogan-square, S.W.*
1908		Drake, E. T., *Government Statist of Victoria, Melbourne.*
1897	*c d p*	DUDFIELD, REGINALD, M.A., M.B., 19, *Blomfield-road, Maida Vale, W.*
1895	*c*	Dudley, The Right Hon. The Earl of, *c/o John Tryon, Esq.*, 1, *New-square, Lincoln's Inn, W.C.*
1909		Duffell, James H., A.I.A., *Royal London Mutual In. Soc., Ltd., Royal London House, Finsbury, E.C.*
1902	*c d*	DUNBAR, SIR WILLIAM C., BART., C.B., 8, *Onslow-square, S.W.*
1908		Dungey, Miss M. E., *Glendower, Clinton-road, Redruth, Cornwall.*
1878	*c*	*Dunraven, The Right Hon. the Earl of, K.P., C.M.G., *Kenry House, Putney Vale, S.W.*
1885		Dyer, William John, 17, *Montpelier-row, Blackheath, S.E.*
1904		Dymant, Arthur F., *Rowantree House, Winchmore Hill.*
1888	*d*	Eckersley, J. C., M.A., F.R.G.S., *Carlton Manor, Yeadon, Leeds.*
1883	*c d p*	EDGEWORTH, PROF. FRANCIS Y., M.A., F.B.A., *All Souls', Oxford.*
1896	*p*	Edwards, C. Lewis, F.S.A.A., *Great Northern Railway, King's Cross, N.*
1907		Elderton, William Palin, F.I.A., 74, *Mount Nod-road, Streatham, S.W.*
1908		Eldridge, Ernest E. B., A.I.A., *National General Insurance Co., Ltd., King's House, King-street, E.C.*

Year of Election.		
1906		Eldridge, Herbert J., F.S.A.A., *5 and 6, Great Winchester-street, E.C.*
1908	*d*	Ellinger, Barnard, *Ashleigh, Buxton.*
1885	*c d p*	Elliott, Sir Thomas H., K.C.B., *Board of Agriculture and Fisheries*, 4, *Whitehall-place, S.W.*
1885		Elliott, William, *Southern Life Office. Cape Town.*
1889	*d*	Erhardt, William, 61^{I}, *Bismarckstr : Charlottenburg-Berlin.*
1905		Erlund, Cedric,
1896		Everett, Percy W., *Oaklands, Elstree, Herts.*
1877	*c d p*	EVERSLEY, THE RIGHT HON. LORD (*Hon. Vice-President*), 18, *Bryanston-square, W.*
1892		Faber, Harald, *Fiona, Lennard-road, Penge, S.E.*
1905		Falk, Oswald T., B.A., F.I.A., 52, *Holland Park-avenue, W.*
1889	*d*	Farnworth, Edward J., F.S.A.A., 26, *Winckley-square, Preston.*
1900		Farrer, The Right Hon. Lord, *Abinger Hall, Dorking.*
1890		Faulks, Joseph E., B.A., F.I.A 187, *Fleet-street, E.C.*
1893		*Fawcett, Mrs. M. G., 2, *Gower-street, W.C.*
1882		Fell, Arthur, M.A., M.P., 46, *Queen Victoria-street, E.C.*
1894		Fellows, Rowland H., F.I.A., 41, *Montrose-avenue, Kilburn, N.W.*
1889		*Finlay, Major Alexander. *The Manor House, Little Brickhill, Bletchley.*
1900	*d*	Fisher, Professor Irving, Ph.D., *Yale University, New Haven, Conn., U.S.A.*
1888		Fisher, Sir Walter N., F.C.A., 4, *Waterloo-street, Birmingham.*
1885		*Fitz-Gerald, Lt.-Col. Wm. G., M.A., F.R.Hist.S.,
1900	*d*	Fleming, Owen, Assoc. R.I.B.A., 3, *Warwick House-street, Charing Cross, S.W.*

Year of Election.		
1893	*c d p*	*FLUX, ALFRED W., M.A., *Board of Trade, Gwydyr House, Whitehall, S.W.*
1882		Foley, Patrick J., *Pearl Insurance Company, Adelaide-place, London Bridge, E.C.*
1889	*d*	Foot, Alfred, *Melbury, Foxley-lane, Purley, Surrey.*
1893		Fortune, David, J.P. *Scottish Legal Life Assurance Society*, 84, *Wilson-street, Glasgow.*
1901		Foster, Harry S., D.L., *Grosvenor Mansions*, 82, *Victoria-street, S.W.*
1897		Fountain, H., *Board of Trade, Whitehall-gardens, S.W.*
1878	*c d*	Foxwell, Professor H. Somerton, M.A., 1, *Harvey-road, Cambridge.*
1894		Francis, Joseph, 10, *Finsbury-square, E.C.*
1887		Frankland, Frederick W., F.I.A., "*Okataina*," *Foxton, Manawata, N. Zealand.*
1899		Franklin, Arthur E., 23, *Pembridge-gardens, W.*
1903	*d*	Fraser, Malcolm A. C., *Government Statistician, Perth, W. Australia.*
1902		Fremantle, Professor Henry E. S., *University of South Africa, Cape Town.*
1905		Frings, Francis A.,
1886		Fuller, George P., *Neston-park, Corsham, Wilts.*
1878		Fuller, William P., *Stone Lodge, Cheam, Surrey.*
1908		Furniss, Henry S., M.A., 20, *Merton-street, Oxford.*
1902		Gait, Edward A., I.C.S., C.I.E., *Census Commissioner for India, Simla, India*
1852		Galsworthy, Sir Edwin H., J.P., 26, *Sussex-place, Regent's-park, N.W.*
1860	*c d p*	Galton, Sir Francis, F.R.S., D.C.L., D.Sc., 42, *Rutland-gate, S.W.*
1887	*d*	Garcke, Emile, *Electrical Federation Offices, Kingsway, W.C.*
1909		Gaskell, Thomas Penn, M.I.C.E., *Townshend House, North-gate, Regent's-park, N.W.*

Year of Election.		
1904		*Gates, Chasemore P., *c/o Anglo-Chilian Nitrate and Railway Company, Tocopilla, Chile.*
1880		*Gates, John B., A.C.A., 1 *and* 2, *The Exchange, Southwark, S.E.*
1899	*d*	Gelling, Benjamin R., *Mutual Life Assn. of Australasia, Sydney, N.S.W.*
1907		Gemmill, William, F.I.A., *P.O. Box* 809, *Johannesburg, S. Africa.*
1909		Ghosh, Devendra Nath., B.A., *Deputy Superintendent, Commercial Intell. Dept.*, 5, *Clive-st., Calcutta.*
1885		Gibb, Sir George S., *Hamilton House, Victoria Embankment, E.C.*
1867	*c d p*	*Giffen, Sir Robert, K.C.B., LL.D., F.R.S. (*Hon. Vice-President*), *Chanctonbury, Hayward's Heath.*
1877		Gilbert, William H. S., 70, *Queen-street, Cheapside, E.C.*
1900		Gladwell, Sydney W., 59, *Palace-street, Victoria-street, S.W.*
1860	*c d p*	Glover, Sir John, J.P., *Highgate Lodge, West-hill, Highgate, N.*
1888		Goad, Charles E., M. Am. and Can. Soc. C.E., 53, *New Broad-st., E.C.; and Montreal, Canada.*
1901	*d*	Godfrey, Ernest H., *Census and Statistics Office, Dept. of Agriculture, Ottawa, Canada.*
1903		Goldman, Leopold, A.I.A., F.C.A., *N. American Life Assurance Co.*, 112–118, *King-st. West, Toronto.*
1897	*c d p*	Gomme, George L., F.S.A., 24, *Dorset-square, Marylebone, N.W.*
1884	*d*	*Gonner, Professor Edward C. K., M.A., *University College, Liverpool.*
1901		*Gooch, Henry C., 17, *Oxford-square, W.*
1900	*d*	Goodsir, George, *c/o Messrs. Weddel & Co.*, 16, *St. Helen's-pl., E.C.*
1892		Goodwin, Alfred, M.A., 2, *Charles-road, St. Leonards, Sussex.*
1899		Gordon, Charles H. F., *Pitlurg, Beacon Hill, Hindhead, Surrey.*
1908		Gough, George W., B.A., 57, *Kenilworth-avenue, Wimbledon, S.W.*
1887		Gover, Frederic F., 10, *Lee-park, Blackheath, S.E.*
1893		*Gray, The Hon. James McL., M.A., F.R.G.S., *c/o R. Todd*, 1, *York-buildings, Adelphi, W.C.*
1904		*Gray, Robert K., 106, *Cannon-street, E.C.*
1895	*d*	Green, John L., 2, *Belmont-park, Lee, S.E.*
1902		Green, Walford D., M.A., *High Garth, Balcombe, Sussex.*

Year of Election.		
1909		*Greenwood, Major, M.R.C.S., L.R.C.P., "*Reigate," Lower Park-road, Loughton, Essex.*
1895		Gretton, John, M.P., *Stapleford Park, Melton-Mowbray.*
1905		Gubbay, M. M. Simeon, B.A., *Dept. of Commerce & Industry, Government of India, Calcutta.*
1878		Guthrie, Charles, F.C.A., *c/o London Bank of Australia, Collins-street, Melbourne.*
1880		*Gwynne, James E. A., J.P., F.S.A., *Folkington Manor, Polegate, Sussex.*
1887		Gwyther, John H., 13, *Lancaster-gate, W.*
1892	*d*	Hadfield, Sir Robert A., *Parkhead House, Sheffield.*
1873	*d*	*Haggard, Frederick T., 1, *Broadwater Down, Tunbridge Wells.*
1903		*Haig, Edric W., M.A., LL.M., *Gatehampton, Goring, Oxon.*
1887		Haldeman, Donald C., *The Rookery, Downe, Kent.*
1897	*d*	Hall, Thomas, *Railway Commissioners' Offices, Sydney, N.S.W.*
1878		Hallett, Thomas G. P., M.A., *Claverton Lodge, Bath.*
1903		Hamilton, Charles J., M.A., 88, *Twyford-avenue, Acton Hill, W.*
1873	*c d p*	Hamilton, The Right Hon. Lord George F., G.C.S.I., 17, *Montagu-street, Portman-square, W.*
1884		*Hammersley, Hugh G., *The Grove, Hampstead, N.W.*
1875		Hankey, Ernest A., *Notton, Lacock, Chippenham.*
1906		Hannon, Patrick J. H., 34, *Leinster-square, W.*
1876		Hansard, Luke, 68, *Lombard-street, E.C.*
1886		*Hardcastle, Basil W., 10, *Gainsborough-gardens, Hampstead, N.W.*
1900		Hardingham, Frederick R., *Rock Life Assurance Co.,* 26, *East-parade, Leeds.*

Year of Election.		
1901	*c d p*	HARPER, EDGAR J., *County Hall, Spring-gardens, S.W.*
1906		*Harper, Robarts, F.R.G.S., F.R. Met. Soc., 2, *High Elms, Woodford Green.*
1893		Harrap, Thomas, 143, *Stamford-street, Ashton-under-Lyne, Lancs.*
1868		Harris, David. *Lyncombe Rise, Prior Park-road, Bath.*
1897		Harris, Walter F., F.I.C.A., 13, *Westbourne-avenue, Hull.*
1882	*d p*	Harris, William J., *Halwill Manor, Beaworthy, R S.O., N. Devon.*
1909		Harrison, C. W. Francis, F.R.G.S., 26, *Victoria-street, S.W.*
1890		Hart, Sir Robert, Bart., G.C.M.G., 38, *Cadogan-place, S.W.*
1900	*p*	Hartley, Edwin L., B.A., 1, *Paper-buildings, Temple, E.C.*
1896		Hawkins, Willoughby R., *Bute Docks, Cardiff.*
1897		Hayakawa. S. 69, *Nagatacho-Nichome, Tokio, Japan.*
1895	*d*	Haynes, Thomas H., 1, *Endsleigh-terrace. Tavistock.*
1909		Heath, John St. George C., *Woodbrooke, Selly Oak, near Birmingham.*
1896		*Heaton-Armstrong, William C., M.P., J.P., 30, *Portland-place, W.*
1908		Heinicke, Fedor. *Calle Victoria* 618, *Buenos Ayres, Argentina.*
1889		*Hemming, Arthur G., F.I.A., *London Assurance Corporation*, 7, *Royal Exchange. E.C.*
1906		Heron, David, M.A., *Galton Eugenics Laboratory*, 88, *Gower-st., W.C.*
1890	*d*	Hewins, W. A. S., M.A., 15, *Chartfield-avenue, Putney Hill, S.W.*
1886		Hibbert, Sir Henry F., 8, *Park-road, Chorley, Lancashire.*
1892	*c d p*	*Higgs, Henry, LL.B., C.B., *The Treasury, Whitehall, S.W.*
1878		*Hill, Frederick M., 1, *The Terrace, Camden-square, N.W.*
1904		Hill, William E., *Kenneth-chambers, Dogpole-court, Shrewsbury.*
1900		Hillingdon, The Right Hon. Lord, 67, *Lombard-street, E.C.*
1906		Hind, Robert, J.P., *Editor, "The Journal," Grahamstown, S. Africa.*
1903		Hiscock, Elias J., 51, *Sotheby-road, Highbury, N.*

Year of Election.		
1909		Hobson, Charles Kenneth, *The Gables, Mount Pleasant, Cambridge.*
1904		Hobson, John A., *Elmstead, Limpsfield, Surrey.*
1905		Hodge, James P., A.C.A., *Hoole Park, Chester.*
1908	*d*	Hoffman, Frederick L., *Prudential Insurance Co., Newark, N.J., U.S.A.*
1888		Hollams, Sir John, 52, *Eaton-square, S.W.*
1895		Holland, Hon. Lionel R., 75, *Eaton-square, S.W.*
1898		Holland, Robert M., 68, *Lombard-street, E.C.*
1901		Holmes, Richard H., J.P. (Alderman), 10, *Royal Arcade, Newcastle-on-Tyne.*
1891	*d*	Hooker, Sir Joseph D., G.C.S.I., F.R.S., &c., *The Camp, Sunningdale.*
1895	*d p*	*Hooker, R. H., M.A., *Campden House-chambers, Sheffield-terrace, W.*
1906	*d*	Hooper, Frederick, *Board of Trade,* 73, *Basinghall-street, E.C.*
1904		Hooper, Frederick T., *Fernleigh, St. Mark's Avenue, Leeds.*
1879		Hooper, George N., *Elmleigh, Hayne-road, Beckenham, Kent.*
1903	*d*	Hooper, William G., F.R.A.S. 40, *Portland-road, Edgbaston, Birmingham.*
1878	*c d p*	Hooper, Wynnard, 13, *Sumner-place, Onslow-square, S.W.*
1887		Hopkins, John, *Little Boundes, Southborough, Kent.*
1902	*d*	Hopwood, Sir Francis J. S., K.C.B., K.C.M.G., *Colonial Office, S.W.*
1909	*d*	Hore, C. F. Adair, *Local Government Board, S.W.*
1890		Howarth, William, 72, *Endwell-road, Brockley, S.E.*
1883		Howell, Francis B., *Ethy, Lostwithiel, Cornwall.*
1897	*p*	Howell, Price, *Killara, near Sydney, N.S.W.*
1874	*c d p*	HUMPHREYS, NOEL A., I.S.O. (*Vice-President*), *Ravenhurst, Hook-road, Surbiton.*
1903		Hunt, Arthur L., "*Bryn,*" *Somerville-road, Sutton Coalfield.*
1883		Hunt, Richard A., A.I.A. (*Wesleyan & Gen. Ass. Society*), *Steelhouse-lane, Birmingham.*
1903		Hunter, Arthur, *New York Life Ass. Co.,* 346, *Broadway, New York, U.S.A.*

Year of Election.		
1888		Hunter, Alderman G. B., D.Sc., *Wallsend-on-Tyne.*
1902	*d p*	Hutchins, Miss B. L., *The Glade, Branch-hill, Hampstead-heath, N.W.*
1888		Hyde, Clarendon G., M.P., 75, *Gloucester-terrace, Hyde-park, W.*
1901		Hyde, Hugh V., *Board of Agriculture,* 3, *St. James's-square, S.W.*
1893	*d*	Hyde, Hon. John, F.R.G.S., F.S.A. (Scot.), 130, *Queen's Gate, S.W.*
1874	*d p*	*Ingall, William T. F. M., *Invermark, Limpsfield, Surrey.*
1903		Innes, Alfred M., *British Embassy, Washington, D.C., U.S.A.*
1887		Irvine, S. W. D'Arcy, J.P., *Equitable Life Assurance Soc. of U.S.A., Revenue Ho.,* 7–8, *Poultry, E.C.*
1907		Irvine, William J., 94, *De Beauvoir-road, De Beauvoir Town, N.*
1902		Jagger, John W., *Cape Town.*
1906		James, A. F. Brodie, *Gresham House, Old Broad-street, E.C.*
1894	*d*	Jamieson, George, C.M.G., 180, *St. James'-court, Buckingham Gate, S.W.*
1908		Janisch, Noel, *Colonial Secretary's Office, Cape Town, S. Africa.*
1872	*c d p*	Janson, Frederick H., F.L.S., 8, *Fourth-avenue, Hove.*
1897	*d*	Jay, E. A. Hastings, *Tower House, Woolwich.*
1881		*Jersey, The Right Hon. the Earl of, G.C.B., *Osterley-park, Isleworth.*

Year of Election.		
1907	*d*	*Jevons, H. Stanley, M.A., B.Sc., *Woodhill, Rhiwbeina, near Cardiff.*
1881		Johnson, E. Eltham, 110, *Cannon-street, E.C.*
1891	*d*	Johnson, George, 28, *Locket-road, Wealdstone.*
1905		Jones, John H., *The University, Liverpool.*
1877		Jones, Theodore B., 70, *Gracechurch-street, E.C.*
1888	*d*	*Jordan, William L., *Royal Societies Club, St. James's-street, S.W.*
1889		Justican, Edwin, F.I.A., *St. Mildred's House, Poultry, E.C.; and Royal Societies Club, St. James's-street, S.W.*
1902		Kains-Jackson, Charles P. C., 10, *The Green, Richmond.*
1885		Keen, William B., 23, *Queen Victoria-street, E.C.*
1884		Kelly, Edward F., 182—184, *High Holborn, W.C.*
1883	*c d*	Keltie, John Scott, F.R.G.S., LL.D., 1, *St. John's Wood Park, N.W.*
1878		Kennedy, J. Murray, *New University Club, St. James's-street, S.W.*
1901		*Kennedy, Pitt, 14, *Pembridge-place, W.*
1898		Kent, Arthur C., 176, *Victoria-street, S.W.*
1909		Ker, William P., *H.B.M. Legation, Peking, China.*
1909		Kerr, Dr. James, M.A., *Educational Offices, Victoria Embankment, W.C.*
1899		Kershaw, John B. C., F.I.C., *West Lancs. Laboratory, Waterloo, Liverpool.*
1905		Keshishian, Agazar, 30, *Church-street, New York, U.S.A.*
1909		Kettle, Bernard, *Guildhall, E.C. (Representing the Library Committee of the Corporation of the City of London).*

Year of Election.		
1909		Keynes, John M., M.A., *King's College, Cambridge.*
1883	*d*	*Keynes, John N., M.A., D.Sc., 6, *Harvey-road, Cambridge.*
1906		Khras, Minocher J. S., *Khras Bungalow, Middle Colaba, Bombay.*
1884		Kimber, Sir Henry, Bart., M.P., 79, *Lombard-street, E.C.*
1898	*c d*	*KING, A. W. WATERLOW, J.P., *Orchard House, Gt. Smith-st., Westminster, S.W.*
1883	*p*	*King, Bolton, M.A., *Arden Lodge, Warwick.*
1894		*Kirkcaldy, William M., *Dunedin, Otago, New Zealand.*
1909	*d*	Kirkham-Hogbin, P. J., *c/o Medical Officer of Health, Maison Dieu House, Dover.*
1889		Kloetgen, W. J. H., 20–21, *Lawrence-lane, E.C.*
1906	*d*	Knibbs, George H., *Commonwealth Statistician, Melbourne, Victoria.*
1878	*d*	*Kusaka, Yoshio, *First National Bank, Tokio, Japan.*
1901	*d*	Lakin-Smith, Herbert, F.C.A., 26, *Waterloo-street, Birmingham.*
1902	*p*	Lark, Albert E., F.C.A., *Hall Quay Chambers*, 2, *South Quay, Great Yarmouth.*
1885	*d*	Latham, Baldwin, M.Inst. C.E., *Parliament-mansions, Victoria-street, S.W.*
1897	*d*	*Lawrence, Frederick W., M.A., 87, *Clement's-inn, W.C.*
1890	*d*	Lawson, William R., *Finchley Lodge, North Finchley, N.*
1908		Layton, Walter T., *Caius College, Cambridge.*
1883	*d*	*Leadam, Isaac S., M.A., 1, *The Cloisters, Temple, E.C.*
1905	*d*	*Leake, Percy D., 25, *Abchurch-lane, E.C.*
1879		*Leete, Joseph, *Eversden, South Norwood-park, S.E.*
1887		Leitch, Alexander (*Scottish Provident Institution*), 3, *Lombard-street, E.C.*

Year of Election.		
1907		Lempfert, R. G. K., M.A., *Meteorological Office. 63. Victoria-street, S.W.*
1892		Leon, Herbert S., *Bletchley-park, Bletchley, Bucks.*
1905		Leonhardt, F. von. 23, *Austin Friars, E.C.*
1888		*Le Poer-Trench, Col. The Hon. W., R.E., J.P., 3, *Hyde Park-gardens, W.*
1887		*Le Roy-Lewis, Lieut.-Colonel Herman, D.S.O., *Westbury House, Petersfield, Hants.*
1899		L'Estrange, Charles J.,
1898		Leveaux, Arthur M., A.I.A., *Registry of Friendly Societies*, 28, *Abingdon-st., Westminster, S.W.*
1908		*Lever, William H., M.P., *The Hill, Hampstead Heath, N.W.*
1903	*d*	Levy, Dr. Hermann, *Kleinschmidtstr.* 44. *Heidelberg, Germany.*
1908		Lewis, Hugh (*L'pool, London & Globe Insurance Co.*). 1, *Cornhill, E.C.*
1862	*d*	Lewis, Robert, 1, *Bartholomew-lane, E.C.*
1888		*Liberty, A. Lasenby, *The Manor House, The Lee, near Gt. Missenden.*
1902	*d*	Litchfield, Frederick, 35, *Hampstead Way, Hendon, N.W.*
1898		Litkie. Valerian A., 39, *South-street, W.*
1892		Llewelyn, Sir John T. D., Bart., *Penllergaer, Swansea.*
1903		*Lloyd, Godfrey I. H., *The University of Toronto, Canada.*
1888	*c d p*	Loch, Professor Charles S., D.C.L., *Drylaw Hatch, Oxshott, Leatherhead.*
1882	*c d p*	*Longstaff, George B., M.A., M.D., F.R.C.P., *Highlands, Putney Heath, S.W.*
1907	*d*	Lord, Samuel, A.S.A.A., 18, *Lynton-road, Acton, W.*
1876		*Lornie, John G., J.P. (*of Birnam & Pitcastle*), *Rosemount, Kirkcaldy, N.B.*
1886		*Low, Malcolm, 22, *Roland-gardens, S.W.*
1909		*Lubbock, The Hon. Harold Fox Pitt, *High Elms, Farnborough, Kent.*
1906		Lucas, Thomas M.,
1903		Lunge, Ernest, LL.D., 2, *Plowden-building, Temple, E.C.*
1908		Lupton, William, *Ruskin Press, Stafford-street, Birmingham.*

Year of Election.		
1904	*d*	Lutterveld, Willem M. J. van, *Schiedamsche Singel, Rotterdam, Holland.*
1905		Lynch, William H., *Highfield, Loom-lane, Radlett.*
1875		*Mabson, Richard R., "*Statist*" *Office*, 51, *Cannon-street, E.C.*
1894		Macaulay, Thomas B., *Sun Life Assurance Co., Montreal, Canada.*
1888		McCankie, James, 129A, *George-street, Edinburgh.*
1903		MacConochie, William P., *Glengariff, New Barnet.*
1902		Macdonald, John H., 47, *Parliament-street, Westminster, S.W.*
1897		MacDonald, Mrs. M. E., 3, *Lincoln's Inn Fields, W.C.*
1898		*Macdonald, Robert A., *Royal Bank of Scotland, Edinburgh.*
1872	*c d p*	Macdonell, Sir John, C.B., LL.D., *Room* 183, *Royal Courts of Justice, W.C.*
1873		*McEwen, Laurence T., *c/o. R. A. McLean*, 1, *Queen Victoria-st., E.C.*
1905		Macgregor, D. H., M.A., *The University, Leeds.*
1906		Mackay, James J., 158, *Leadenhall-street, E.C.*
1900		Mackay, Thomas, *Sandwood, Nairn.*
1886		*Mackenzie, Colin, F.R.G.S.,
1876		*McLean, Robert A., F.R.G.S., 1, *Queen Victoria-street, E.C.*
1888	*d*	McNiel, Henry, 18, *Exchange-street, Manchester.*
1882		MacRosty, Alexander, *West Bank, Esher.*
1904		Macrosty, Henry W., B.A., 29, *Hervey-road, Blackheath, S.E.*
1899		*MacWharrie, Niel M., *Conservative Club, St. James's, S.W.*
1906	*d*	Magnus, Sir Philip, M.P., 16, *Gloucester-terrace, Hyde Park, W.*

Year of Election.		
1891		Maidment, Thomas, *Insurance Chambers, King's-road, Southsea.*
1904	*c d p*	MALLET, BERNARD, *General Register Office, Somerset House, W.C.*
1902	*d*	Mandello, Professor Julius G., Ph.D. *Pozsony, Hungary.*
1908		Mann, Joseph, *Hopedene, Coulsdon. Surrey.*
1908		Manohar Lal, Professor, M.A., *Calcutta University, Calcutta, India.*
1884		*Manson, Frederick W., *Faircrouch, Wadhurst, Sussex.*
1888		Manuel, James, 36, *Vittoria-street, Ottawa, Canada.*
1880	*c d p*	*Marshall, Professor Alfred, M.A., *Balliol Croft, Madingley-road, Cambridge.*
1887		Marshall, W. Bayley, M.I.C.E., M.I.M.E., *Imperial Hotel, Malvern.*
1872	*c d p*	*MARTIN, SIR RICHARD BIDDULPH, BART. (*Hon. Vice-President and Treasurer*), 10, *Hill-street, Mayfair, W.*
1884		Mason, William A., 31*a*, *Colmore-row, Birmingham.*
1898		Massingberd, Captain Stephen, *Gunby Hall, Burgh, Lincolnshire.*
1875		*Mathers, John S.,
1901		Meakin, George H., A.S.A.A., *Town Hall, Islington, N.*
1882		Medhurst, John T., F.S.A.A., *City of London College, Moorfields, E.C.*
1901		Meredith, Hugh O., *Hollycroft, Cavendish-avenue, Cambridge.*
1884	*d*	Merton, Zachary, 31, *Green-street, Park-lane, W.*
1907		Middleton, Professor Thomas H., M.A., 4, *Whitehall-place, S.W.*
1909		Millard, Percy W., 3, *St. James's-square, S.W.*
1900		Miller, John W., *Union Club, S.W.*
1889		*Mills, Major Henry Farnsby,
1892	*c d*	Milner, The Rt. Hon. Viscount, G.C.B., G.C.M.G., 47, *Duke-street, S.W.*
1882	*p*	Milnes, Alfred, M.A., 44, *Goldhurst-terrace, S. Hampstead, N.W.*
1907		*Mitchell, Frederick W., *Star Life Assurance Soc.*, 32, *Moorgate-st., E.C.*
1902		Molesworth, Sir Guilford L., K.C.I.E., *The Manor House, Bexley, Kent.*

Year of Election.		
1888	*d*	*Molloy, William R. J., M.R.I.A., 78, *Kenilworth-square*, *Rathgar*, *Dublin.*
1899		*Moon, Edward R. P., 6, *Onslow Gardens*, *W.*
1887		Moore, Arthur C., 23, *Essex-street*, *Strand*, *W.C.*
1874		Moore, Charles R., 43, *Breakspears-road*, *St. Johns*, *S.E.*
1885		Moore, Harold E., F.S.I., *Oaklands*, *Beckenham.*
1878		*Moore, John B. G., *Loymount*, *Cookstown*, *Ireland.*
1903		Moores, George, 9, *Beaufort-avenue*, *West Didsbury*, *Manchester.*
1909	*d*	Morgan, Ben. H., *Caxton House*, *Westminster*, *S.W.*
1893	*d*	Morgan, Percy C., *Queen Anne's Chambers*. *S.W.*
1909		Morison, Hector McDonald, A.C.A., *Oakwood*, *Park Hill-road*, *Croydon.*
1902	*c*	MORISON, THEODORE, M.A., *Ashleigh*, *St. George's-road*, *Weybridge.*
1909		Morris, R. Denman, 10, *Carlingford-road*, *Hampstead*, *N.W.*
1891	*c d p*	Morrison, Rev. William D., LL.D., 2, *Embankment-gardens*, *Chelsea*, *S.W.*
1904		Mosely, Alfred, C.M.G., *West Lodge*, *Hadley Wood*, *Barnet.*
1885		*Mosley, Tonman, *Bangors*, *Iver*, *Uxbridge.*
1886	*c*	Mowbray, Sir Robert G. C., Bart., 90, *Piccadilly*, *W.*
1886	*d*	Moxon, Thomas B., *Lancs. and Yorks. Bank*, *King-st.*, *Manchester.*
1904		Mudie-Smith, Richard, 9, *Clifton-villas*, *Maida Vale*, *W.*
1883		Muirhead, Henry J., *Fairfield*, *Hythe*, *Kent; and Reform Club*, *S.W.*
1899	*d*	Muirhead, James M. P., J.P., F.R.S.E., F.R.S.L., F.S.A.A., F.C.I.S., F.R.C.I., *Box* 1161, 57, *St. George's-street*, *Cape Town.*
1905		Muller, Osvald V., M.A., *Elphinstone College*, *Bombay; and Newquay*, *Cornwall.*
1891	*c d*	MURPHY, SIR SHIRLEY F., F.R.C.S., 9, *Bentinck-terrace*, *Regent's-park*, *N.W.*

Year of Election.		
1909		Nathan, Eric Barrett, A.I.A., 99, *Portsdown-road, W.*
1878		*Nathan, Henry,
1907		Nathan, Sir Nathaniel, K.C., *Queen's House, St. James's Court, S.W.*
1908		Neill, Samuel B., 13*a*, *Canton-road, Shanghai, China.*
1908		Neill, Thomas, *London, Edinburgh, and Glasgow Assurance Co., Ltd., Euston Square, N.W.*
1869	*c d p*	Neison, Francis G. P., F.I.A., 93, *Adelaide-road, South Hampstead, N.W.*
1877		Nevill, C. Henry, 1 *and* 2, *Great Winchester-street, E.C.*
1905		Nevill, Henry R., *Allahabad, U.P., India.*
1900		Newcomb, Harry T., LL.M., *Bethesda, Montgomery County, Md., U.S.A.*
1894		Newey, William L., LL.D., 53, *Waverley-road, Small Heath, Birmingham.*
1889	*c d p*	Newsholme, Arthur, M.D., 57, *Northgate, Regent's-park, N.W.*
1895	*c*	*Nicholson, Charles N., M.P., 35, *Harrington-gardens, South Kensington, S.W.*
1878	*d p*	Nicholson, Professor J. Shield, M.A., D.Sc., *University of Edinburgh.*
1858	*d*	Nightingale, Miss Florence, O.M., 10, *South-street, Park-lane, W.*
1871		*Noble, Benjamin, F.R.A.S., *Westmorland House, Low Fell, Gateshead.*
1889		Northampton, The Most Hon. the Marquess of, 51, *Lennox-gardens, S.W.*
1888		Oakley, Sir Henry, 37, *Chester-terrace, Regent's-park, N.W.*
1886	*d*	O'Conor, James E., C.I.E., 144, *Church-road, Upper Norwood, S.E.*
1901		Offen, Charles R. W., *Bloomsbury House, Queen-square, W.C.*

Year of Election.		
1885	d	*Oldham, John (*River Plate Telegraph Co.*), 287, *San Martin, Buenos Ayres.*
1909		O'Malley, L.S.S., I.C.S., 123, *Earlham-road, Norwich,*
1892	c p	Onslow, The Right Hon. the Earl of, G.C.M.G. (*Hon. Vice-President*), 7, *Richmond-terrace, Whitehall, S.W.*
1878		Oppenheim, Henry, 16, *Bruton-street, Bond-street, W.*
1899		Ormsby, John Y., *c/o Burnett, Ormsby Clapp & Co.,* 7, *Melinda-street, Toronto.*
1909		Osborne, James Henry, F.R.G.S., *Knoyle House, Ealing, W.*
1887	d	*Page, Edward D., *Oakland, Bergen County, N.J., U.S.A.*
1899	c d p	Paish, George, "*Statist*" *Office*, 51, *Cannon-street, E.C.*
1866	c d p	*Palgrave, Sir R. H. Inglis, F.R.S., *Henstead Hall, Wrentham, Suffolk.*
1906		Parish, Walter Woodbine, 9, *Courtfield-road, S.W.*
1878		Park, David F., C.A., F.F.A., A.I.A., 39, *Lombard-street, E.C.*
1908		Parker, Charles Sandbach, *Demerara-buildings, St. Dunstan's-hill, E.C.*
1903		Parker, Sir Gilbert, M.P., 20, *Carlton House-terrace, S.W.*
1891		Parker-Smith, The Rt. Hon. James, 20, *Draycott-place, S.W.*
1883		Paterson, John, 1, *Walbrook, E.C.*
1888		Pattullo, James Durie. 65, *London Wall, E.C.*
1878	d	Paulin, Sir David, 6, *Forres-street, Edinburgh.*
1893	d	Payne, Alexander W., F.C.A., 70, *Finsbury-pavement, E.C.*
1884		*Peace, Sir Walter, K.C.M.G., I.S.O., 83, *Victoria-street, Westminster, S.W.*
1909		Pearce, A. James, A.C.A., *Corn Exchange Chambers, Princes-st., Ipswich.*
1895		Peixotto, M. Percy (*U.S. Equitable Life Office*), 36, *Avenue de l'Opéra, Paris.*

Year of Election		
1903		Pekelharing, Dr. G., 11, *Zeemansstraat, Rotterdam.*
1891	*d*	Penn-Lewis, William, "*Cartref,*" *Toller-road, Leicester.*
1892		*Pentland, The Right Hon. Lord, 2, *Cambridge-square, W.*
1906		Perkins, Herbert H. W.,
1902	*d*	Peters, Edward T., *Bureau of Statistics, Dept. of Agriculture, Washington, D.C., U.S.A.*
1890		Peters, John W., 5, *King's-road, Southsea.*
1886		Peto, Sir Henry, Bart., M.A., *Chedington Court, Misterton, Crewkerne.*
1887	*d*	Phelps, Lieut.-General Arthur, 23, *Augustus-road, Edgbaston, Birmingham.*
1908	*d*	Phelps, E. Bunnell, M.A., "*The American Underwriter,*" 141, *Broadway, New York City, U.S.A.*
1886	*d*	*Phelps, Rev. Lancelot R., M.A., *Oriel College, Oxford.*
1900	*d*	*Pigou, Professor Arthur C., M.A., *King's College, Cambridge.*
1904		Pilling, John A., *c/o Messrs. Deloitte and Co., Florida 77, Buenos Ayres.*
1878	*d*	*Pim, Joseph Todhunter, *Rinnamara, Monkstown, Co. Dublin.*
1903		Pirrie, The Right Hon. Lord, K.P., LL.D., *Downshire House, Belgrave-square, S.W.*
1881		Planck, Deputy Surgeon-General Charles, M.R.C.S., *Lyden Croft, Edenbridge, Kent.*
1902		Plant, Alfred T., *Accountant's Office, G.W.R., Paddington, W.*
1895	*d*	Platt-Higgins, Frederick, *Woodham-place, Horsell, Woking.*
1901		Plender, William (*c/o Messrs. Deloitte and Co.*), 5, *London Wall-buildings, Finsbury-circus, E.C.*
1861	*c d*	Plowden, Sir William C., K.C.S.I., 5, *Park-crescent, Portland-place, W.*
1905		Pocock, Bernard G., A.S.A.A., 197, *High Holborn, W.C.*
1896		*Pontifex, Bryan, A.C.A., *Imperial Bank-buildings, Toronto, Canada.*
1891		Potter, Henry, *Normanhurst, Grosvenor-rd., Westcliffe-on-Sea, Essex.*
1879	*c d p*	*POWELL, SIR FRANCIS S., BART., M.P., (*Honorary Vice-President*), 1, *Cambridge-sq., Hyde-park, W.*
1877		*Prance, Reginald H., *Frognal, Hampstead, N.W.*
1867		*Pratt, Robert L., 13, *Danesbury-terrace, Darlington.*

Year of Election.		
1896		Pretyman, Captain Ernest G., M.P., *Orwell-park, Ipswich.*
1887	c d p	*Price, L. L., M.A., (*Vice-President*), *Oriel College, Oxford.*
1909		Pritchard, Arthur, M.A., 3, *Temple-gardens, Temple, E.C.*
1887	c d p	Probyn, Sir Lesley, K.C.V.O., 79, *Onslow-square, S.W.*
1889		Probyn, Lieut.-Colonel Clifford, 55, *Grosvenor-street, Grosvenor-square, W.*
1886	d	Provand, Andrew D., 2, *Whitehall-court, S.W.*
1896		Pryor, Edward T., 23, *Fore-street, E.C.*
1901		Quin, Stewart B., F.C.A., 16, *Donegall-square South, Belfast.*
1883		Rabbidge, Richard, F.C.A., 32, *Poultry, E.C.*
1872	d p	*Rabino, Joseph, *The Godwins, Christchurch-park, Sutton.*
1858		*Radstock, The Right Hon. Lord, *Mayfield, Woolston, Southampton.*
1885	c d	Rae, John, M.A., 1, *Rockland-road, Putney, S.W.*
1887	d p	Raffalovich, His Excellency Arthur, 19, *Avenue Hoche, Paris.*
1909		Raghunatha Rao, C. S. (*Agricultural Research Institute*), *Pusa, Bengal, India.*
1880	c	Rankin, Sir James, Bart., M.P., *Bryngwyn, Hereford.*
1897		Ranson, Albert, *Tavern-street, Ipswich.*
1903		Rathbone, Miss Eleanor F., *Green Bank, Liverpool, E.*

Year of Election.		
1874	c d p	*Ravenstein, Ernest G., F.R.G.S., 2, *York-mansions, Battersea-park, S.W.*
1877		*Rawlins, Thomas, 45, *King William-street, E.C.*
1893		Rea, Charles H. E., F.R.A.S., A.I.A., "*Holmesdale,*" *South Darenth, Kent.*
1908		Reade, Hubert Vincent. 32, *Palace Gardens-terrace, Kensington, W.*
1889		*Reed, Thomas, F.C.A., 63, *King-street, South Shields.*
1908		Reid, George T., B.Sc., *The Nook, Chatfont St. Giles, Bucks.*
1906		Rennie, James Stuart M., *Tangong Pagar Docks, Singapore, Straits Settlement.*
1888	c d p	Rew, R. H. (*Hon. Sec., Hon. Foreign Sec., and Vice-President*), *Board of Agriculture & Fisheries,* 3, *St. James's-square, S.W.*
1888		Rhodes, George W., 131, *Wool Exchange, Coleman Street, E.C.*
1895		Richards, Roger C., *Cader House, Foxley-lane, Purley.*
1909		Ridley, Rt. Hon. Viscount, 10, *Carlton House-terrace, S.W.*
1903		Ripon, The Right Rev. the Lord Bishop of, *The Palace, Ripon.*
1892		Rivington, Francis H., 44, *Connaught-square, W.*
1882		Roberts, Edward, I.S.O., F.R.A.S., *Park Lodge, Court-road, Eltham.*
1894	d p	Robertson, J. Barr, 10, *Walbrook, E.C.*
1900		Robinson, James, *Clarendon Ho., Clayton-st. W., Newcastle-on-Tyne.*
1904		Rogers, Arthur G. L., M.A., *Board of Agriculture, &c.,* 4, *Whitehall-place, S.W.*
1880		*Ronald, Byron L., 14, *Upper Phillimore-gardens, W.*
1873	c	*Rosebery, The Rt. Hon. the Earl of, K.G., K.T., F.R.S., 38, *Berkeley-square, W.*
1904	d p	Rosenbaum, Simon, M.Sc., "*Hauteville,*" 81, *Wavendon-av., Chiswick, W.*
1892	d	Ross, Charles E., F.S.A.A., *c/o Messrs. T. Cook & Son, Ludgate-circus, E.C.*
1904		Routly, William H., F.S.A.A., *Borough Treasurer, Folkestone.*
1899	d	Rowntree, B. Seebohm, 32, *St. Mary's, York & The Homestead, Clifton, York.*
1898	d p	Rozenraad, Cornelius, 4, *Moreton-gardens, South Kensington, S.W.*
1890		Ruffer, Marc A., C.M.G., M.A., M.D., B.Sc. *Ramleh, Egypt.*

Year of Election.		
1903		Runciman, Rt. Hon. Walter, M.P., *Doxford, Chathill, Northumberland.*
1888	*d*	Rusher, Edward A., F.I.A., 142, *Holborn Bars, E.C.*
1886		Russell, Arthur B., F.C.A., 17, *Rosslyn-hill, Hampstead. N.W.*
1878	*d*	Russell, Richard F., 160, *Milfort-road, Thornton Heath, Croydon.*
1907	*d*	Rutter, Frank R., *Bureau of Statistics,* *Dept. of Agriculture, Washington. D.C., U.S.A.*
1907		Rye, Reginald A., *Goldsmiths' Librarian,* *University of London, South Kensington, S.W.*
1894	*d*	Sachs, Edwin O., 10A, *Waterloo-place, Pall Mall, S.W.*
1909		*Sale, Charles V., 40, *Threadneedle-street, E.C.*
1898	*d*	Salmon, Richard G., F.I.A., *Oakdale House, Oakdale-road, Streatham, S.W.*
1875	*d*	*Salomons, Sir David L., Bart., J.P., *Broom-hill, Tunbridge Wells.*
1908	*d*	Samuel, George A. H., *Morden House, Catford.*
1899	*d*	Sanderson, Frank, M.A., *Canada Life Ass. Co., Toronto, Canada.*
1895	*c*	SANGER, CHARLES P., M.A., 58, *Oakley-street, Chelsea, S.W.*
1891		*Sarda, Pandit Har Bilas, B.A., M.R.A.S., *Government College, Ajmere, India.*
1886	*d p*	Sauerbeck, Augustus, *Messrs. H. Schwartze & Co.,* 3 & 4, *Moorgate-street-buildings, E.C.*
1887		*Scarth, Leveson, M.A., 12, *York-buildings, Adelphi, W.C.*
1902		Schindler, Walter, *c/o Gebr.-Sulzer, Winterthur, Switzerland.*
1904		*Schlesinger, Louis G., 12A, *Avenida Sur* 16B, *Guatemala.*
1891	*d p*	*Schloss, David F., M.A., 18, *Hornton Court, Kensington, W.*
1908	*d*	Schmidt, Arno, 22, *St. Mary's-gate, Manchester.*
1895		Schmidt, Hermann, 36A, *Ampthill-square, N.W.*

Year of Election.		
1891	*d p*	Schooling, J. Holt, *Fotheringhay Hse., Montpelier-row, Twickenham.*
1908		Schumpeter, Dr. Joseph A., *I Maria-Theresienstr.* 3, *Vienna.*
1895	*d*	Schuurman, Willem H. A. Elink, *Godelindeweg*, 10, *Hilversum, Holland.*
1883		*Schwann, John F., *Oakfield, Wimbledon, S.W.*
1888		Scotter, Sir Charles, Bart., *Surbiton.*
1880		*Seeley, Sir Charles, Bart., *Sherwood Lodge, Nottingham.*
1905		Sellar, Alexander S., M.A., *c/o George King, Esq.*, 15, *Walbrook, E.C.*
1899		Setchfield, George B., *Beulah Kop*, 3, *Clarkson-street, Sheffield.*
1886	*d p*	Seyd, Ernest J. F., 38, *Lombard-street, E.C.*
1905	*d*	Seyd, Richard E. N. J., 38, *Lombard-street, E.C.*
1908		Shakir Ali, Mahomed, *Barrister-at-Law*, *Basti, United Provinces, India.*
1909		Sharp, Clifford Dyce, *Woodside Corner, Erskine-hill, Hendon, N.W.*
1898	*c d p*	SHAW, WILLIAM N., D.Sc., F.R.S., 10, *Moreton-gardens, South Kensington, S.W.*
1907		Sheffield, The Right Hon. Lord, 18, *Mansfield-street, W.*
1898	*d*	Sherwell, Arthur, M.P., *Thackeray Hotel, Gt. Russell-street, W.C.*
1888		Shillcock, Joshua, M.A., *Bank of England, Burlington-gardens, W.*
1907		Shimmell, James E., A.I.A., 96, *Oxford-road, Manchester.*
1905		Silva, N. P. da Motta E., 3, *Avenue du Trocadero, Paris.*
1904	*c*	SIM, J. D. STUART, *Reg. of Friendly Societies*, 28, *Abingdon-st., S.W.*
1907	*d*	Simon, André L., 24, *Mark-lane, E.C.*
1902		Sinclair, H. D., 19 *and* 20, *Silver-street. Wood-street, E.C.*
1906		Smith, Charles, 11, *Winter-street. Sheffield.*
1878		*Smith, Charles, M.R.I.A., F.G.S., "*Park View,*" *Englefield-green, Surrey.*
1878	*d*	*Smith, George, LL.D., C.I.E., 10, *South Learmouth-gardens, Edinburgh.*
1889	*d*	Smith, G. Armitage, M.A., D.Sc., 3, *Albert-terrace, Regent's-park, N.W.*

Year of Election.			
1904			*Smith, H. B. Lees, M.A., 7, *Pembroke-vale, Clifton, Bristol.*
1906			Smith, Horace A. *Bureau of Statistics, Sydney, N.S.W.*
1877			Smith, Howard S., F.C.A., A.I.A., F.F.A., *Bank Chambers,*14,*Waterloo-street,Birmingham.*
1888	c d		Smith, Sir H. Llewellyn, K.C.B., B.Sc., *Oakfield Lodge, Ashtead.*
1901			Smith, Robert J., C.A., 163, *West George-street, Glasgow.*
1905			Smith, Stanley G., 43, *Mount Pleasant-villas, Stroud Green, N.*
1894			*Smith, The Hon. William F. D., M.P., 3, *Grosvenor-place, S.W.*
1908			Smith, William H., F.S.A.A., 70, *Sunny Bank, Hull.*
1894			Smithers, Frederick O., 171, *Adelaide-road, South Hampstead, N.W.*
1900	c	p	*SOMERVILLE, PROFESSOR WILLIAM, M.A., D.Sc., 121, *Banbury-road, Oxford.*
1899			Sorley, James, F.I.A., F.F.A., F.R.S.E., 82, *Onslow-gardens, S.W.*
1904			Souter, John, *c/o Mines Department, P.O. Box* 1132, *Johannesburg.*
1897			Southgate, Henry W., 29, *Hamilton-avenue, Chapletown, Leeds.*
1895			Soward, Alfred W., 28, *Therapia-road, Honor Oak, S.E.*
1855	d		Sowray, J. Russell, "*Fairlawn,*" *Teston, Maidstone.*
1904			Sowrey, John W., "*Beaconsfield,*" *Devonshire-road, Merton, S.W.*
1896			Sparrow, Frederick S., 84, *Pitt-street, Sydney, N.S.W.*
1906			Spear, Bertram E., *Duneira,* 277, *Willesden-lane, N.W.*
1904			Spencer, Frederick H., LL.B., "*Elm Grove Cottage,*" *Pinner, Middlesex.*
1867			*Spencer, Robert J.,
1892			Spender, John A., M.A., 45, *Sloane-street, S.W.*
1897	d		Spensley, J. Calvert. 3, *Provost-road, S. Hampstead, N.W.*
1883			Spicer, Sir Albert, Bart., M.P., 50, *Upper Thames-street, E.C.*
1898			Spicer, Edward S., *Grange Cottage, The Grange, Wimbledon.*
1856	d		*Sprague, Thomas B., M.A., LL.D., F.I.A., 29, *Buckingham-terrace, Edinburgh.*

Year of Election.		
1882		Stack, Thomas N., 7, *Union-court, E.C.*
1901		Stallard, Charles F., *P.O. Box 5156, Johannesburg.*
1902		*Steel-Maitland, Arthur H. D. R., 72. *Cadogan-square, S.W.*
1899		Stenberg, Ernst G., *Chief Electoral Officer, W. Australia, Perth, W.A.*
1882		*Stern, Sir Edward D., 4, *Carlton House-terrace, S.W.*
1885	*d*	*Stevens, Marshall, *Trafford Park, Manchester.*
1903	*d*	Stevens, William J., "*St. Clair," Tyson-road, Forest Hill, S.E.*
1908	*d p*	Stevenson, Dr. T. H. C., *General Register Office, Somerset House, W.C.*
1906		*Stock, Edward J., A.I.A., 395, *Collins-st., Melbourne, Victoria, Australia.*
1889		Stow, Major Harry V., 24, *Holborn, E.C.*
1883	*d*	*Strathcona, The Right Hon. Lord, G.C.M.G., 28, *Grosvenor-square, W.*
1909	*d*	Streeter, Rev. Theodore E., 312, *Atlantic-avenue, Winnipeg, Man., Canada.*
1884		*Sugden, Richard, *The Farre Close, Brighouse, Yorkshire.*
1895		Sutherland, J. Francis, M.D., 51, *Queen-street, Edinburgh.*
1902		Sutton, Martin J., J.P., *Holme Park, Sonning, Berks.*
1900		Swetenham, Charles C., *c/o Grindlay Groom & Co., Bombay, India.*
1900	*d p*	Sykes, John F. J., M.D., D.Sc., 40, *Camden-square, N.W.*
1889	*d*	Tattersall, William, *Melbrook, Bowdon, Cheshire.*
1905		Taylor, William B., B.A., LL.B., 112–118, *King-street West, Toronto.*
1893		Teece, Richard, F.I.A., F.F.A., *Actuary, A.M.P. Society, Sydney, N.S.W.*

Year of Election.		
1888	*d*	Temperley, William A., junr., 2, *St. Nicholas-buildings, Newcastle-on-Tyne.*
1888		Theobald, John W., 8, *Fairfield-road, Croydon.*
1888	*c d p*	THOMAS, DAVID A., M.A., M.P., *Llanwern, near Newport, Mon.*
1906		Thomas, Henry C.,
1905		Thomas, P. Scofield, 220, *Croydon-road, Anerley, S.E.*
1864		*Thompson, Henry Y., 19, *Portman-square, W.*
1909		Thompson, John W., F.F.A., A.I.A., *Glenearn, Cockenzie, N.B.*
1901	*d p*	Thompson, Robert J., *Board of Agriculture, &c.,* 8, *Whitehall-place, S.W.*
1889	*d*	Touche, George A., *Broomfield, Westcott, near Dorking.*
1868		*Treatt, Frank B., *Court House, Cowra, New South Wales.*
1868		Tritton, Joseph H., 54, *Lombard-street, E.C.*
1903	*d*	Trivett, John B., *Bureau of Statistics, Sydney, N.S.W.*
1903		Tryon, Captain George C., 45, *Eaton-place, S.W.*
1885		Turner, William, *c/o The Librarian,* *Free Public Library, Trinity-street, Cardiff.*
1909		Turnor, Christopher, *Panton Hall, Wragby, Lincolnshire.*
1892	*d*	Tyler, Edgar A., 9, *Old Jewry Chambers, E.C.*
1903		Unstead, John F., M.A., F.R.G.S., 39, *Greenholm-road, Eltham Park, S.E.*

Year of Election.		
1903		*Vaizey, Ker G. R., 10, *Lime-street, E.C.*
1888		Van Raalte, Marcus, 22, *Austin Friars, E.C.*
1889		*Venning, Charles H., 25, *Lawrence-lane, Cheapside, E.C.*
1894		Verney, Frederick W., M.P., *Botolph House, Winslow, Bucks.*
1909		Verney, Harry, B.Sc., B. Comm. LL.B., 12, *St. Mary's-place. Bury, Lancs., and Home Office, London, S.W.*
1886	*c*	Verulam, The Right Hon. the Earl of, *Gorhambury, St. Albans.*
1905		Vigor, Harold D., 196, *Mackenzie-road, Beckenham, Kent.*
1885		Vincent. Frederick J., A.I.A., *London, Edinburgh and Glasgow Assurance Co., Ltd., Euston Square, N.W.*
1904		Vinter, James O., J.P., *Southfield, Trumpington, Cambs.*
1902		Wacha, Dinsha Edulji, 84, *Hornby-road, Fort, Bombay.*
1905		Wadia, N. P. N., M.S.A.A., 105, *Adelaide-road, N.W.*
1904		Wagner, H. R., 165, *Broadway, New York, U.S.A.*
1900		Walford, Adolphus A. B. (*Frank Brown & Co.*), *Finkle Chambers, Stockton-on-Tees.*
1890	*d*	Walford, Ernest L., 47, *Hamilton-terrace, N.W.*
1909		Walker, James, 720, *Dumbarton-road, Partick West, Glasgow.*
1906		Walker, William T., A.C.A., 6a, *Austin Friars, E.C.*
1904	*d*	Wall, Walter W., 4, *Bradgate-road, Catford, S.E.*
1905		Wallis, B. Cotterell, F.C.P., B.Sc. (Econ.), 27a, *Sedgemere-avenue, East Finchley, N.*
1868		Wallis, Charles J., *Woodcroft, Battle, Sussex.*
1880	*d*	Wallis, E. White, *Cannons-lane, Pinner, Middlesex.*
1908		Wallis, Percy, 155, *Stamford-road, Kettering.*

Year of Election			
1904			*Walsh, Correa M., *Bellport, Long Island, New York, U.S.A.*
1899			Ward, Joseph F., 20, *Main-street, Port Elizabeth, S. Africa.*
1893			Ward, William C., F.S.I.A., 113, *Pitt-street, Sydney, N.S.W.*
1888			Warren, Reginald A., J.P., *Preston-place, near Worthing.*
1865			Waterhouse, Edwin, A.I.A., F.C.A., 3, *Frederick-place, Old Jewry, E.C.*
1886		*p*	Waters, Alfred C., *General Register Office, Somerset House, W.C.*
1892			Wates, Charles M., 4, *Garden-road, Bromley, Kent.*
1902		*d*	Watson, Alfred W., F.I.A., 40, *Shakespeare-street, Notts.*
1908			Webb, Augustus D., B.Sc., 5, *St. George's-avenue, Tufnell Park, N.*
1888			Webb, Henry B., *Holmdale, Dorking.*
1904		*d*	Webb, The Hon. Mr. Montagu de Pomeroy, C.I.E., *Karachi, India.*
1893		*d*	Weedon, Thornhill, *Govt. Statistician, Bryn-Mawr, Brisbane.*
1873	*c*		*Welby, The Right Hon. Lord, G.C.B., 11, *Stratton-street, Piccadilly, W.*
1889			*Wells-Smith, Henry, F.C.A., "*Hillcrest,*" *Blyth-grove, Worksop, Notts.*
1855	*c*	*d p*	**Welton, Thomas A.**, F.C.A., *Ixworth Court, Stanhope-road, Highgate, N.*
1902		*d*	Westall, George, 87, *Chancery-lane, W.C.*
1879			*Westlake, John, K.C., LL.D., *The River House, 3, Chelsea Embankment, S.W.*
1901			Weston, Sydney F., 19, *Epperstone-rd., W. Bridgford, Nottingham.*
1882			*Whadcoat, John H., F.C.A., *Rockcliffe, Kirkcudbrightshire.*
1878			Wharton, James, *Edgehill, Netherhall-gds., Fitzjohn's-av., N.W.*
1887			Whinney, Frederick, 85, *Avenue-road, Regent's Park, N.W.*
1859			Whitbread, Samuel, *Southill-park, Biggleswade, Beds.*
1887			*White, The Rev. George C., M.A., *Nursling Rectory, Southampton.*
1905			White, Richard, F.C.I.S., *Folkestone Chamber of Commerce, Folkestone.*
1888		*d*	Whitehead, Sir James, Bart., J.P., D.L., *Wilmington Manor, near Dartford.*

Year of Election.		
1895	*d*	Whitehead, The Hon. Thomas Henderson, M.L.C., *Chartered Bank of India, &c., Hong Kong.*
1892	*c d*	Whitelegge, B. Arthur, C.B., M.D., 3, *Edwardes-place, Kensington, W.*
1895		Whittuck, Edward A., M.A., B.C.L., *Claverton Manor, Bath.*
1899		Wiener, Isidore, *Colecroft, Kenley, Surrey.*
1898		Wigham, Matthew T., A.S.A.A., F.C.I.S., 826, *Salisbury House, London Wall, E.C.*
1884		Wightman, Charles, *Messrs. W. Caudery & Co.,* 1, *Fenchurch-av., E.C.*
1909		Wilbur, Dr. Cressy L., *Chief Statistician,* *Bureau of the Census, Washington, D.C., U.S.A.*
1860		Willans, John Wrigley, 25, *King's-gardens, West End-lane, Hampstead.*
1901	*d*	Willcox, Walter F., Ph.D., *Cornell University, Ithaca, N.Y., U.S.A.*
1896		*Williams, Major C. Woolmer, 28, *Prebend-mansions, High-road, Chiswick, W.*
1897	*d*	*Williams, Ernest E., *Ecclefechan, Lake-road, Wimbledon, S.W.*
1904		Williams, Frederick A., A.I.A., F.A.S., *Apartado* 1420, *Mexico City, Mexico D.F.*
1864		Williams, Frederic B., F.S.A. (Scot.), 19, *Haymarket, S.W.*
1895		Williams, H. Mallam, F.S.A. (Scot.), *Tilehurst, Priory-park, Kew.*
1907		Williams, J. P. C. C., Ph.D., M.R.A.S., M.S.A., 103, *Clive-street, Calcutta, India.*
1888		*Williams, Robert, M.P., 20, *Birchin-lane, E.C.*
1909		Williams, Sydney Fairs, 181, *Queen Victoria-street, E.C.*
1895		*Willis, J. G., B.A., *Board of Trade, Whitehall-gardens, S.W.*
1901		Wilson, George T., 120, *Broadway, New York, U.S.A.*
1891		Wilson, Henry J., M.P., *Osgathorpe Hills, Sheffield.*
1898		Wilson, Herbert W., 203, *Elgin-avenue, W.*
1884		Wilson, The Hon. Sir James, K.C.S.I., *Ochilview, Crieff, N.B.*
1906		Wilson, Walter, 3, *East-parade, Leeds.*
1909		Wolfe, Lee J., 161, *Broadway, New York, U.S.A.*
1900	*d*	Wolfe, S. Herbert, 165, *Broadway, New York City, U.S.A.*

Year of Election		
1899	c p	WOLVERHAMPTON. RT. HON. VISCOUNT, G.C.S.I. (*Hon. Vice-President*), *Reform Club, Pall Mall, S.W.*
1897	d p	Wood, George H., *Caerleon Ho., Oakfield-rd., Birkby, Huddersfield.*
1897		Woodd, Basil A. H., 59, *Drayton-gardens, S.W.*
1902		Woodhouse, Lister, A.C.A., *Westminster City Hall, Charing Cross-rd., W.C.*
1908		Woodward, James H., 137, *Gillott-road, Edgbaston, Birmingham.*
1890		*Woollcombe, Robert L., LL.D., &c., 14, *Waterloo-road, Dublin.*
1903		Woolley, Ernest, 7, *Finch-lane, Cornhill, E.C.*
1895		Worsfold, Edward M., F.C.A., *Market Square, Dover.*
1878		Worsfold, Rev. John N., M.A., *Hathelsey*, 17, *Alexandra-road, Worthing.*
1906		Wyldbore-Smith, Edmund C., *H.M. Vice-Consul, British Legation, Tangier, Morocco.*
1895	d	Yanagisawa, Count Yasutoshi, 1, *Shiba Yamachi*, 8, *Chôme, Tokio, Japan.*
1868	c d p	Yerburgh, Robert A., 25, *Kensington Gore, S.W.*
1900		Yerbury, John E., 3, *Queen-street, Cheapside, E.C.*
1888		*Yglesias, Miguel, 2, *Tokenhouse-buildings, E.C.*
1877		*Youll, John G., *Jesmond-road, Newcastle-on-Tyne.*
1909		Young, Arthur Stanley, F.I.A., *H.H. The Nizam's Service, Hyderabad, Deccan, India.*
1908		Young, Charles W. F., M.D., *Middlesex Guildhall, Westminster, S.W.*
1898		Young, Sydney, *The Corn Exchange, Mark-lane, E.C.*
1895	c d p	YULE, G. UDNY (*Hon. Secretary*), 28, *Great Ormond-street, W.C.*

Year of Election.		
1901		Zimmerman, Lawrence W., 282, *Dickenson-road, Rusholme, Manchester.*

*** *The Honorary Secretaries request that any inaccuracy in the foregoing list, and all changes of address, may be notified to the* ASSISTANT SECRETARY.

HONORARY FELLOWS.

HIS MOST GRACIOUS MAJESTY THE KING,
Patron.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.,
Honorary President.

Year of Election.

Argentine Republic.

1890 *d* FRANCISCO LATZINA, **Calle Maipu, 982, Buenos Ayres.**
Director General of Statistics; Doctor *honoris causâ* of the Faculty of Physical and Mathematical Sciences of the University of Cordoba; Knight of the Italian Order of S.S. Maurice and Lazare; Officer of the Academy of France; Member of the National Academy of Sciences, of the International Statistical Institute, of the Geographical and Statistical Societies of Paris, of the Society of Commercial Geography of Paris, and Corresponding Member of the National Historical Academy of Venezuela.

Austria-Hungary.

1893 *d* FRANZ RITTER VON JURASCHEK, **Kärnthnerstrasse, 55, Vienna.**
Doctor Juris et Philosophiæ; Hofrat; K.K. Regierungsrath; President of the Imperial and Royal Central Statistical Commission; Professor at the University of Vienna; Professor of Public Law and of Statistics at the Military Academies, Vienna; Knight of the Austrian Order of the Iron Crown (3rd Class); Officer of the Order of the Crown of Italy; Member of the Permanent Commission for Commercial Values; of the International Statistical Institute; and of the Royal Economic Society.

1904 *d* JULES DE VARGHA, **Budapest.**
Director of the Central Statistical Bureau of Hungary; President of the Commission for the preparation of the annual administration report on Hungary; Member of the International Statistical Institute.

Belgium.

1904 *d* EMILE WAXWEILER, **Parc Leopold, Brussels.**
Honorary Engineer of Roads and Bridges; Director of the Sociological Institute, Brussels; Professor of Economics and Finance at the University of Brussels; Superintendent of Statistical Section of Labour Department; Member of the International Statistical Institute.

Denmark.

Year of Election		
1878	*d*	VIGAND ANDREAS FALBE-HANSEN, **Copenhagen.** Late Director of the Statistical Bureau of the State; late Professor of Political Economy at the University of Copenhagen; Director of the Life and Fire Office "Danmark"; *Doctor Juris.*
1900	*d p*	MARCUS RUBIN, **Vendersgade 25a, Copenhagen.** Knight of the Order of the "Danebrog"; Director-General of Customs and Taxation; late Director of the Statistical Bureau of the State; President of the Danish Society of Political Economy and of the Board of the Danish Society of History; Member of the International Statistical Institute.
1907	*d p*	HARALD LUDVIG WESTERGAARD, **Scherfigsvej, Copenhagen.** Professor of Statistics at the University of Copenhagen.

France.

Year of Election		
1880	*d p*	JACQUES BERTILLON, M.D., **1, Avenue Victoria, Paris.** Chief of the Statistical Department of the City of Paris; Member of the Superior Council of Statistics; of the Consultative Committee of Public Hygiene of France; Past President of the Statistical Society of Paris; and Member of the International Statistical Institute, &c.
1879	*d*	ARTHUR CHERVIN, M.D., **82, Avenue Victor Hugo, Paris.** Doctor of Medicine and Surgery; Director of the Paris Institute for Stammerers; Vice-President of the Statistical Society of Paris; Member of the Superior Institute, &c.
1897	*d*	JEAN JACQUES ÉMILE CHEYSSON, **4, Rue Adolphe Yvon, Paris.** Member of the Institute of France; Professor at the "École Libre des Sciences Politiques"; Member of the "Conseil Supérieur de Statistique"; Commander of the Legion of Honour, &c.
1890	*d p*	ALFRED DE FOVILLE, **30, Rue Bellechase, Paris.** Late Master of the Mint; Councillor of the Court of Accounts; Officer of the Legion of Honour; Member of the Institute of France; Past President of the Statistical Society of Paris; Member of the International Statistical Institute and of the Superior Council of Statistics.
1908	*d p*	YVES GUYOT, **95, Rue de Seine, Paris.** Member of the "Conseil Supérieur de Statistique"; Ex-President of the Statistical Society of Paris; Ex-Minister of Public Works; Guy Medallist; Hon. Member of the Cobden Club, &c.

France—*Contd.*

Year of Election		
1860	*d p*	PIERRE ÉMILE LEVASSEUR, **Collège de France, Paris.** Member of the Institute of France; Professor at the College of France and at the Conservatoire of Arts and Trades; President of the Statistical Commission for Primary Instruction; Past President of the Statistical Society of Paris; Vice-President of the International Statistical Institute, of the Superior Council of Statistics, and of the Society of Political Economy, &c.
1887		DANIEL WILSON, **2, Avenue d'Jéna, Paris.** Ex-Under-Secretary of State; Past President of the Statistical Society of Paris.
1876	*d*	THE PRESIDENT (for the time being) OF THE STATISTICAL SOCIETY OF PARIS, **28, Rue Serpente Danton, Paris.**

Germany.

Year of Election		
1890	*d*	KARL JULIUS EMIL BLENCK, **Lindenstrasse, 28, Berlin, S.W.** Wirklicher Geheimer Ober-Regierungsrat; Director of the Royal Statistical Bureau of Prussia, also Member of the Prussian Central Statistical Commission and of the Central Board of Control of the Survey of Prussia; Member of the International Statistical Institute; Honorary Member or Member of several learned Societies.
1896	*d*	CARL VICTOR BÖHMERT, **Hospitalstrasse, 4, Dresden.** Geheimer Regierungsrath; Doctor Juris; Late Director of the Statistical Bureau of Saxony; Professor of Political Economy and Statistics in the Polytechnical High School of Dresden; Member of the International Statistical Institute.
1908	*d*	RICHARD VAN DER BORGHT, **Kaiserl. Statistisches Amt, Berlin.** President of the Imperial Statistical Bureau; Organiser of the Census Arrangements of the Empire; President of the Council for Labour Statistics, &c.
1904	*d*	DR. WILHELM LEXIS, **Göttingen.** Professor of Economics and Statistics at the University of Göttingen; Vice-President of the International Statistical Institute.
1877	*d*	GEORG VON MAYR, **Georgenstrasse, 38, Munich.** Ex-Under Secretary of State in the Imperial Ministry for Alsace-Lorraine; formerly Director of the Royal Statistical Bureau of Bavaria; Honorary Member of the International Statistical Institute; Ordinary Professor of Statistics, Finances, and Political Economy at the University of Munich; Associate of the Statistical Society of Paris.
1897	*d*	ADOLPH WAGNER, Ph.D., **51, Lessingstrasse, Berlin, N.W.** Professor of Political Economy at the University of Berlin; Member of the Statistical Bureau of Prussia, and of the International Statistical Institute.

Year of Election

Germany—*Contd.*

1876 *d* THE PRESIDENT (for the time being) OF THE GEOGRAPHICAL AND STATISTICAL SOCIETY OF FRANKFORT, **Stadtbibliothek, Frankfort.**

Italy.

1874 *d* LUIGI BODIO, **153, Via Torino, Rome.**
Senator; Doctor of Laws; Professor of Industrial Legislation and of Statistics at the Engineering College, Rome; Councillor of State; formerly General Director of the Statistics of the Kingdom; formerly Commissioner-General of Emigration; Member of the International Statistical Institute; Member of the Royal Academy "dei Lincei"; Correspondent of the Institute of France (Academy of Moral and Political Sciences).

1899 *d* CARLO FRANCESCO FERRARIS, **Via 20 settembre, 7, Padua.**
Professor of Administrative Science and Law, and of Statistics at the Royal University of Padua; Member of the Superior Council of Statistics and of the Superior Council of Public Education of Italy; Member of the Academy "dei Lincei," of the Royal Institute of Science at Venice, of the International Statistical Institute, and Honorary Member of the Swiss Statistical Society; Ex-Minister of Public Works; Member of the Italian Parliament.

1907 *d* ENRICO RASERI, M.D., **Direzione Generale della Statistica, Rome.**
Chief Director of the Division of Demographic Statistics of the Statistical Department of the Kingdom; Secretary of the "Higher Council of Statistics."

Mexico.

1895 *d* DON MANUEL FERNANDEZ LEAL, **Casa de Moneda, Mexico City.**
Director of the Mint; Late Secretary of State, Department of "Fomento," Colonization and Industry.

Netherlands.

1896 *d* NICOLAAS GERARD PIERSON, **Technical Academy of Delft.**
Minister of Finance; Late President of the Central Statistical Commission of the Netherlands; Late President of the Netherlands Bank; Late Professor of Political Economy at the University of Amsterdam; Member of the International Statistical Institute.

Year of Election.

Netherlands—*Contd.*

1904 *d* C. A. VERRIJN STUART, **12, Nieuwe Parklaan, The Hague.**

President of the Central Statistical Commission of the Netherlands; Professor of Political Economy and Commercial Law at the Académie Technique, Delft; Late Director of the Central Statistical Bureau of the Netherlands; Member of the Central Commission of Statistics; Corresponding Member of Statistical Society of Paris; Secretary-General of International Statistical Institute.

Norway.

1874 *d* ANDERS NICOLAI KLÆR, **Christiania.**

Director of the Central Statistical Bureau of Norway; Associate of the Statistical Society of Paris; Member of the International Statistical Institute.

Russia.

1873 *d* HIS EXCELLENCY PIERRE SEMENOV, **St. Petersburg.**

Senator; Privy Councillor to His Imperial Majesty; President of the Imperial Statistical Council; President of the Imperial Geographical Society; Honorary Member of the Academy of Sciences in St. Petersburg; Associate of the Statistical Society of Paris.

1890 *d* HIS EXCELLENCY NICOLAS TROÏNITSKY, **Mohovaïa 6, St. Petersburg.**

Former Governor; Senator; Privy Councillor; late Director of the Central Statistical Committee of the Ministry of the Interior; President of the Statistical Council, Life Member of the Imperial Geographical Society of Russia, Vice-President of the International Statistical Institute, and Member of the Statistical Society of Paris.

Sweden.

1890 *d* ELIS SIDENBLADH., Ph.D., **Stockholm.**

Late Director in Chief of the Central Statistical Bureau of Sweden; Late President of the Royal Statistical Commission; Commander, Officer, and Knight of several Swedish and Foreign Orders; Member of the Royal Academies of Sciences and of Agriculture, at Stockholm, of the International Statistical Institute, and Honorary and Corresponding Member of several foreign learned Societies.

Year of Election

Sweden—*Contd.*

1909 GUSTAV SUNDBÄRG, **Stockholm.**
Superintendent, Central Statistical Bureau of the Kingdom; Actuary; Compiler of the series "Aperçus statistiques internationaux," &c.

Switzerland.

1890 *d* LOUIS GUILLAUME, **Bern.**
Doctor of Medicine; Director of the Federal Statistical Bureau; Secretary of the International Penitentiary Commission; Member of the International Statistical Institute.

United States.

1873 *d* THE HON. WILLIAM BARNES, **The O'Conor-Barnes Homestead, On the Cliff, Nantucket Island, Mass., U.S.A.**
Lawyer; Ex-Superintendent of the Insurance Department, State of New York.

1881 *d* JOHN SHAW BILLINGS, **425, Lafayette Street, New York City.**
M.A., M.D., LL.D., Edinburgh and Harvard; D.C.L., Oxon; Surgeon, U.S. Army; Member of the National Academy of Sciences, of the International Statistical Institute, &c.

1896 *d* WORTHINGTON CHAUNCEY FORD, c/o **Massachusetts Historical Society, Boston, Mass., U.S.A.**
Late Chief of the Bureau of Statistics, Treasury Department; Late Chief of the Bureau of Statistics, Department of State; Member of the International Statistical Institute.

1877 *d* EDWARD YOUNG, M.A., Ph.D., **207, Maryland Avenue, N.E., Washington, D.C.**
Late Consul of the United States; formerly Chief of the Bureau of Statistics, United States of America; Member of the Geographical Society of Paris.

Dominion of Canada.

1894 *d* GEORGE JOHNSON, **Grand Pré, Nova Scotia.**
Late Statistician, Department of Agriculture, Ottawa, Canada.

Tasmania.

Year of Election.		
1894	*d*	ROBERT MACKENZIE JOHNSTON, I.S.O., **Hobart.** Registrar-General and Government Statistician; Fellow and Member of Council of the Royal Society of Tasmania; Member of Council and of Senate of the University of Tasmania; Fellow and Past President of Section F (*Economics* and *Statistics*) of the Australasian Association for the Advancement of Science; Fellow of the Royal Geographical Society of Australia; Honorary Foreign Corresponding Member of the Geological Society of Edinburgh; Fellow of the Linnean Society of London.
1876	*d p*	EDWIN CRADOCK NOWELL, I.S.O., J.P., **Hobart.** Clerk of Legislative Council of Tasmania; late Government Statistician; Clerk to the Federal Council of Australasia in its seven Sessions.

Great Britain and Ireland.

1876	*d*	THE PRESIDENT (for the time being) OF THE MANCHESTER STATISTICAL SOCIETY, **3, York Street, Manchester.**
1876	*d*	THE PRESIDENT (for the time being) OF THE STATISTICAL AND SOCIAL INQUIRY SOCIETY OF IRELAND, **35, Molesworth Street, Dublin.**

⁂ The Honorary Secretaries request that any inaccuracies in the List of Honorary Fellows, and all changes of address, may be notified to the Assistant Secretary.

ROYAL STATISTICAL SOCIETY.

Copy of Charter.

Victoria, by the Grace of God of the United Kingdom of Great Britain and Ireland Queen, Defender of the Faith.

To all to whom these Presents shall come, Greeting:—

Whereas Our Right trusty and entirely beloved cousin, Henry, Third Marquess of Lansdowne. Knight of the Most Noble Order of the Garter, Charles Babbage, Fellow of the Royal Society, John Elliott Drinkwater, Master of Arts, Henry Hallam, Fellow of the Royal Society, the Reverend Richard Jones, Master of Arts, and others of Our loving subjects, did, in the year One thousand eight hundred and thirty-four, establish a Society to collect, arrange, digest and publish facts, illustrating the condition and prospects of society in its material, social, and moral relations; these facts being for the most part arranged in tabular forms and in accordance with the principles of the numerical method, and the same Society is now called or known by the name of "The "Statistical Society."

And Whereas it has been represented to Us that the same Society has, since its establishment, sedulously pursued such its proposed objects, and by its publications (including those of its transactions), and by promoting the discussion of legislative and other public measures from the statistical point of view, has greatly contributed to the progress of statistical and economical science.

And Whereas distinguished individuals in foreign countries, as well as many eminent British subjects, have availed themselves of the facilities offered by the same Society for communicating important information largely extending statistical knowledge; and the general interest now felt in Statistics has been greatly promoted and fostered by this Society

And Whereas the same Society has, in aid of its objects, collected a large and valuable library of scientific works and charts, to which fresh accessions are constantly made; and the said Society has hitherto been supported by annual and other subscriptions and contributions to its funds, and has lately acquired leasehold premises in which the business of the said Society is carried on.

And Whereas in order to secure the property of the said Society, to extend its operations, and to give it its due position among the Scientific Institutions of Our kingdom, We have been besought to grant to Sir Rawson William Rawson, Knight Commander of the Most Distinguished Order of St. Michael and St. George, and Companion of the Most Honourable Order of the Bath, and to those who now are Members of the said Society, or who shall from time to time be elected Fellows of the Royal Statistical Society hereby incorporated, Our Royal Charter of Incorporation for the purposes aforesaid.

1. **Now Know Ye** that We, being desirous of encouraging a design so laudable and salutary, of Our especial grace, certain knowledge and mere motion, have willed, granted, and declared and Do by these Presents, for Us, Our heirs and successors, will, grant, and declare that the said Sir Rawson William Rawson, Knight Commander of the Most Distinguished Order of St. Michael and St. George, and Companion of the Most Honourable Order of the Bath, and such other of Our loving subjects as now are Members of the said Society, or shall from time to time be elected Fellows of "The Royal Statistical Society" hereby incorporated according to such regulations or bye laws as shall be hereafter framed or enacted, and their successors, shall for ever hereafter be by virtue of these presents one body politic and corporate, by the name of "**The Royal Statistical Society,**" and for the purposes aforesaid, and by the name aforesaid, shall have perpetual succession and a common seal, with full power and authority to alter, vary, break, and renew the same at their discretion, and by the same name to sue and be sued, implead and be impleaded, answer and be answered, unto and in every Court of Us, Our heirs and successors.

2. **The** Royal Statistical Society, in this Charter hereinafter called "The Society," may, notwithstanding the statutes of mortmain, take, purchase, hold and enjoy to them and their successors a hall, or house, and any such messuages or hereditaments of any tenure as may be necessary, for carrying out the purposes of the Society, but so that the yearly value thereof to be computed at the rack rent which might be gotten for the same at the time of the purchase or other acquisition, and including the site of the said hall, or house, do not exceed in the whole the sum of Two thousand pounds.

3. **There** shall be a Council of the Society, and the said Council and General Meetings of the Fellows to be held in accordance with this Our Charter shall, subject to the provisions of this Our Charter, have entire the management and direction of the concerns of the Society.

4. **There** shall be a President, Vice-Presidents, a Treasurer or Treasurers, and a Secretary or Secretaries of the Society. The Council shall consist of the President, Vice-Presidents, and not

less than twenty Councillors; and the Treasurer or Treasurers and the Secretary or Secretaries if honorary.

5. **The** several persons who were elected to be the President, Vice-Presidents, and Members of the Council of the Statistical Society at the Annual Meeting held in the month of June, One thousand eight hundred and eighty-six, shall form the first Council of the Society, and shall continue in office until the first Election of officers is made under these presents as hereinafter provided.

6. **General** Meetings of the Fellows of the Society may be held from time to time, and at least one General Meeting shall be held in each year. Every General Meeting may be adjourned, subject to the provisions of the Bye Laws. The following business may be transacted by a General Meeting, viz.:—

(*a.*) The Election of the President, Vice-Presidents, Treasurer or Treasurers, Secretary or Secretaries, and other Members of the Council of the Society.

(*b.*) The making, repeal, or amendment of Bye Laws.

(*c.*) The passing of any proper resolution respecting the affairs of the Society.

7. **Bye Laws** of the Society may be made for the following purposes, and subject to the following conditions, viz.:—

(*a*) For prescribing the qualification and condition of tenure of office of the President; the number, qualifications, functions, and conditions of tenure of office of the Vice-Presidents, Treasurers, Secretaries, and Members of Council, and Officers of the Society; for making regulations with respect to General Meetings and Meetings of the Council and proceedings thereat, and for the election of any persons to be Honorary Fellows or Associates of the Society, and defining their privileges (but such persons, if elected, shall not be Members of the Corporation), and for making regulations respecting the making, repeal and amendment of Bye Laws, and generally for the government of the Society and the management of its property and affairs.

(*b.*) The first Bye Laws shall be made at the first General Meeting to be held under these presents, and shall (amongst other things) prescribe the time for holding the first election of officers under these presents.

8. **The** General Meetings and adjourned General Meetings of the Society shall take place (subject to the rules or bye laws of the Society, and to any power of convening or demanding a

Special General Meeting thereby given) at such times and places as may be fixed by the Council.

9. **The** existing rules of the Statistical Society, so far as not inconsistent with these presents, shall be in force as the Bye Laws of the Society until the first Bye Laws to be made under these presents shall come into operation.

10. **Subject** to these presents and the Bye Laws of the Society for the time being, the Council shall have the sole management of the income, funds, and property of the Society, and may manage and superintend all other affairs of the Society, and appoint and dismiss at their pleasure all salaried and other officers, attendants, and servants as they may think fit, and may do all such things as shall appear to them necessary or expedient for giving effect to the objects of the Society.

11. **The** Council shall once in every year present to a General Meeting a report of the proceedings of the Society, together with a statement of the receipts and expenditure, and of the financial position of the Society, and every Fellow of the Society may, at reasonable times to be fixed by the Council, examine the accounts of the Society.

12. **The** Council may, with the approval of a General Meeting, from time to time appoint fit persons to be Trustees of any part of the real or personal property of the Society, and may make or direct any transfer of such property so placed in trust necessary for the purposes of the trust, or may, at their discretion, take in the corporate name of the Society conveyances or transfers of any property capable of being held in that name. Provided that no sale, mortgage, incumbrance, or other disposition of any hereditaments belonging to the Society shall be made unless with the approval of a General Meeting.

13. **No** Rule, Bye Law, Resolution, or other proceeding shall be made or had by the Society, or any meeting thereof, or by the Council, contrary to the general scope or true intent and meaning of this Our Charter, or the laws or statutes of Our Realm, and anything done contrary to this present clause shall be void.

In Witness whereof We have caused these Our Letters to be made Patent.

Witness Ourself, at Westminster, the thirty-first day of January, in the fiftieth year of Our Reign.

By Warrant under the Queen's Sign Manual,

MUIR MACKENZIE.

L. S.

ROYAL STATISTICAL SOCIETY.

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BYE-LAWS OF THE ROYAL STATISTICAL SOCIETY.

Objects of the Society.

1. The objects of the Royal Statistical Society are to collect, arrange, digest and publish facts, illustrating the condition and prospects of society in its material, social and moral relations; these facts being for the most part arranged in tabular forms and in accordance with the principles of the numerical method.

The Society collects new materials, condenses, arranges, and publishes those already existing, whether unpublished or published in diffuse and expensive forms in the English or in any foreign language, and promotes the discussion of legislative and other public measures from the statistical point of view. These discussions form portions of the published Transactions of the Society.

Constitution of the Society.

2. The Society consists of Fellows and Honorary Fellows, elected in the manner hereinafter described.

Number of Fellows and Honorary Fellows.

3. The number of Fellows is unlimited. Foreigners or British subjects of distinction residing out of the United Kingdom may be admitted as Honorary Fellows, of whom the number shall not be more than seventy at any one time.

Proposal of Fellows.

4. Every Candidate for admission as a Fellow of the Society shall be proposed by two or more Fellows, who shall certify from their personal knowledge of him or of his works, that he is a fit person to be admitted a Fellow of the Society. Every such certificate having been read and approved of at a Meeting of the Council, shall be suspended in the office of the Society until the following Ordinary Meeting, at which the vote shall be taken.

Election of Fellows.

5. In the election of Fellows, the votes shall be taken by ballot. No person shall be admitted unless at least sixteen Fellows vote, and unless he have in his favour three-fourths of the Fellows voting.

Admission of Fellows.

6. Every Fellow elect is required to take the earliest opportunity of presenting himself for admission at an Ordinary Meeting of the Society.

The manner of admission shall be thus:—

Immediately after the reading of the minutes, the Fellow elect, having first paid his subscription for the current year or his composition, shall sign the obligation contained in the Fellowship-book, to the effect following:—

"We, who have underwritten our "names, do hereby undertake, each for "himself, that we will endeavour to "further the good of the Royal Statis-"tical Society for improving Statistical "Knowledge, and the ends for which "the same has been founded; that we "will be present at the Meetings of the "Society as often as conveniently we "can, and that we will keep and fulfil "the Bye-laws and Orders of this "Society: provided that whensoever "any one of us shall make known, by "writing under his hand, to the Secre-"taries for the time being, that he "desires to withdraw from the Society, "he shall be free thenceforward from "this obligation."

Whereon the President, taking him by the hand, shall say,—"By the "authority, and in the name of the "Royal Statistical Society, I do admit "you a Fellow thereof."

Upon their admission Fellows shall have the right of attaching to their names the letters F.S.S., but not in connection with any trading or business advertisement other than the publication of any book or literary notice.

Admission of Honorary Fellows.

7. There shall be Two Meetings of the Society in the year, on such days as shall be hereafter fixed by the Council, at which Honorary Fellows may be elected.

No Honorary Fellow can be recommended for election but by the Council. At any Meeting of the Council any Member thereof may propose a Foreigner or

British subject of distinction residing out of the United Kingdom, delivering at the same time a written statement of the qualifications of, offices held by, and published works of, the person proposed; and ten days' notice at least shall be given to every Member of the Council, of the day on which the Council will vote by ballot on the question whether they will recommend to the Society the election of the person proposed. No such recommendation to the Society shall be adopted unless at least three-fourths of the votes are in favour thereof.

Notice of the recommendation shall be given from the chair at the Meeting of the Society next preceding that at which the vote shall be taken thereon. No person shall be elected an Honorary Fellow unless sixteen Fellows vote and three-fourths of the Fellows voting be in his favour.

The Council shall have power to elect as Honorary Fellows, the Presidents for the time being of the Statistical Societies of Dublin, Manchester, and Paris, and the President of any other Statistical Society at home or abroad.

Payments by Fellows.

8. Every Fellow of the Society shall pay a yearly subscription of Two Guineas, or may at any time compound for his future yearly payments by paying at once the sum of Twenty Guineas.* unless the Annual Subscription or Composition Fee shall be remitted by the Council; provided that the number of Fellows whose Annual Subscription or Composition Fee shall have been thus remitted, do not exceed five at any one time.

Every person elected to the Society shall pay his first subscription (or if he desire to become a Life Fellow, his composition) within three months at the latest of the date of his election, if he be resident in the United Kingdom. If he be resident abroad, this period shall be six months. If payment be not made within the time specified above, the election shall be void.

Defaulters.—Withdrawal of Fellows.

9. All yearly payments are due in advance on the 1st of January, and if any Fellow of the Society have not paid his subscription before the 1st of July, he shall be applied to in writing by the Secretaries, and if the same be not paid before the 1st of January of the second year, a written application shall again be made by the Secretaries, and the Fellow in arrear shall cease to receive the Society's publications, and shall not be entitled to any of the privileges of the Society until such arrears are paid; and if the subscription be not discharged before the 1st of February of the second year, the name of the Fellow thus in arrear shall be exhibited on a card suspended in the office of the Society; and if, at the next Annual General Meeting, the amount still remain unpaid, the defaulter shall, unless otherwise authorised by the Council, be announced to be no longer a Fellow of the Society, the reason for the same being at the same time assigned. No Fellow of the Society can withdraw his name from the Society's books, unless all arrears be paid; and no resignation will be deemed valid unless a written notice thereof be communicated to the Secretaries. No Fellow shall be entitled to vote at any Meeting of the Society until he shall have paid his subscription for the current year.

Expulsion of Fellows.

10. If any Fellow of the Society, or any Honorary Fellow, shall so demean himself that it would be for the dishonour of the Society that he longer continue to be a Fellow or Honorary Fellow thereof, the Council shall take the matter into consideration; and if the majority of the Members of the Council present at some Meeting (of which and of the matter in hand such Fellow or Honorary Fellow, and every Member of the Council, shall have due notice) shall decide by ballot to recommend that such Fellow or Honorary Fellow be expelled from the Society, the President shall at its next Ordinary Meeting announce to the Society the recommendation of the Council, and at the following Meeting the question shall be decided by ballot, and if at least three-fourths of the

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* Cheques should be made payable to "The Royal Statistical Society," and crossed "Messrs. Drummond and Co."

number voting are in favour of the expulsion, the President shall forthwith cancel the name in the Fellowship-book, and shall say,—

"By the authority and in the name "of the Royal Statistical Society, I do "declare that A. B. (naming him) is no "longer a Fellow (or Honorary Fellow) "thereof."

And such Fellow or Honorary Fellow shall thereupon cease to be of the Society.

Trustees.

11. The property of the Society may be vested in three Trustees, chosen by the Fellows. The Trustees are eligible to any other offices in the Society.

President, Council, and Officers.

12. The Council shall consist of a President and thirty Members, together with the Honorary Vice-Presidents.

From the Council shall be chosen four Vice-Presidents, a Treasurer, the Honorary Secretaries, and a Foreign Secretary, who may be one of the Honorary Secretaries. The former Presidents who are continuing Fellows of the Society shall be Honorary Vice-Presidents. Any five of the Council shall be a quorum.

Election of President and Officers.

13. The President, Members of Council, Treasurer, and Honorary and Foreign Secretaries shall be chosen annually by the Fellows at the Annual General Meeting.

The Vice-Presidents shall be chosen annually from the Council by the President.

The President shall not be eligible for the office more than two years in succession.

Six Fellows, at least, who were not of the Council of the previous year, shall be annually elected; and of the Members retiring three at least shall be those who have served longest continuously on the Council, unless they hold office as Treasurer or Honorary or Foreign Secretary.

Nomination of President, Council, and Officers.

14. The Council shall, previously to the Annual General Meeting, nominate, by ballot, the Fellows whom they recommend to be the next President and Council of the Society. They shall also recommend for election a Treasurer and the Secretaries (in accordance with Rule 12). Notice shall be sent to every Fellow whose residence is known to be within the limits of the metropolitan post, at least a fortnight before the Annual General Meeting, of the names of Fellows recommended by the Council.

Extraordinary Vacancies.

15. On any extraordinary vacancy occurring of the Office of President, or other Officer of the Society, the Honorary Secretaries shall summon the Council with as little delay as possible, and a majority of the Council, thereupon meeting in their usual place, shall, by ballot, and by a majority of those present, choose a new President, or other Officer of the Society, to be so until the next Annual General Meeting.

Committees.

16. The Council shall have power to appoint Committees of Fellows and also an Executive Committee of their own body. The Committees shall report their proceedings to the Council. No report shall be communicated to the Society except by the Council.

Auditors.

17. At the first Ordinary Meeting of each year, the Fellows shall choose two Fellows, not being Members of the Council, as Auditors, who, with one of the Council, chosen by the Council, shall audit the Treasurer's accounts for the past year, and report thereon to the Society, which report shall be presented at the Ordinary Meeting in February. The Auditors shall be empowered to examine into the particulars of all expenditure of the funds of the Society, and may report their opinion upon any part of it.

Meetings Ordinary and General.

18. The Ordinary Meetings of the Society shall be held monthly, or oftener, during the Session, which shall be from the 1st of November to the 1st of July in each year, both inclusive, on such days and at such hours as the Council shall declare. The Annual General Meeting shall be held on such day in the month of June of each year as shall be appointed by the Council for the time being.

Business of Ordinary Meetings.

19. The business of the Ordinary Meetings shall be to elect and admit Fellows, to read and hear reports, letters, and papers on subjects interesting to the Society. Nothing relating to the bye-laws or management of the Society shall be discussed at the Ordinary Meetings, except that the Auditors' Report shall be presented at the Ordinary Meeting in February, and that the Minutes of the Annual General Meeting, and of every Special General Meeting, shall be submitted for confirmation at the next Ordinary Meeting after the day of such Annual or Special General Meeting. Strangers may be introduced to the Ordinary Meetings, by any Fellow, with the leave of the President, Vice-President, or other Fellow presiding at the Meeting.

Business of Annual General Meeting.

20. The business of the Annual General Meeting shall be to elect the Officers of the Society, and to discuss questions on its bye-laws and management. No Fellow or Honorary Fellow shall be proposed at the Annual General Meeting. No Fellow shall propose any alteration of the rules or bye-laws of the Society at the Annual General Meeting, unless after three weeks' notice thereof given in writing to the Council, but amendments to any motion may be brought forward without notice, so that they relate to the same subject as the motion. The Council shall give fourteen days' notice to every Fellow of all questions of which such notice shall have been given to them.

Special General Meetings.

21. The Council may, at any time, call a Special General Meeting of the Society when it appears to them necessary. Any twenty Fellows may require a Special General Meeting to be called, by notice in writing signed by them, delivered to one of the Secretaries, specifying the questions to be moved. The Council shall, within one week of such notice, appoint a day for such Special General Meeting, and shall give at least one week's notice of every Special General Meeting, and of the questions to be moved, to every Fellow within the limits of the metropolitan post, whose residence is known. No business shall be brought forward at any Special General Meeting other than that specified in the notice convening the same.

Duties of the President.

22. The President shall preside at all Meetings of the Society, Council, and Committees which he shall attend, and in case of an equality of votes, shall have a second or casting vote. He shall sign all diplomas of admission of Honorary Fellows. He shall admit and expel Fellows and Honorary Fellows, according to the bye-laws of the Society.

Duties of the Treasurer.

23. The Treasurer shall receive all moneys due to, and pay all moneys owing by, the Society, and shall keep an account of his receipts and payments. No sum exceeding Ten Pounds shall be paid but by order of the Council, excepting always any lawful demand for rates or taxes. The Treasurer shall invest the moneys of the Society in such manner as the Council shall from time to time direct.

Duties of the Honorary Secretaries.

24. The Honorary Secretaries shall, under the control of the Council, conduct the correspondence of the Society; they or one of them shall attend all Meetings of the Society and Council, and shall duly record the Minutes of the Proceedings. They shall issue the requisite notices, and read such papers to the Society as the Council may direct.

Powers of the Vice-Presidents.

25. A Vice-President, whether Honorary or nominated, in the chair, shall act with the power of the President in presiding and voting at any Meeting of the Society or Council, and in admitting Fellows; but no Vice-President shall be empowered to sign diplomas of admission of Honorary Fellows, or to expel Fellows or Honorary Fellows. In the absence of the President and Vice-Presidents, any Member of Council may be called upon by the Fellows then present, to preside at an Ordinary or Council Meeting, with the same power as a Vice-President.

Powers of the Council.

26. The Council shall have control over the papers and funds of the Society, and may, as they shall see fit, direct the publication of papers and the expenditure of the funds, in accordance with the provisions of the Charter.

27. The Council shall be empowered at any time to frame Regulations not inconsistent with these bye-laws, which shall be and remain in force until the next Annual General Meeting, at which they shall be either affirmed or annulled; but no Council shall have power to renew Regulations which have once been disapproved at an Annual General Meeting.

28. The Council shall have the custody of the Common Seal. The Common Seal shall not be affixed to any instrument, deed, or other document, except by order of the Council and in the presence of at least two Members of the Council and in accordance with such other regulations as the Council shall from time to time prescribe. The fact of the seal having been so affixed shall be entered on the minutes of the Council.

29. No Dividend, Gift, Division, of Bonus in money shall be made by the Society, unto or between any of the Fellows or Members, except as hereinafter provided.

30. The Council shall publish a Journal of the Transactions of the Society, and such other Statistical Publications as they may determine upon, and may from time to time pay such sums to Editors and their assistants whether Fellows of the Society or not as may be deemed advisable.

31. All communications to the Society are the property of the Society, unless the Council allow the right of property to be specially reserved by the Contributors.

REGULATIONS OF THE LIBRARY.

1. The Library and the Reading Room are open daily from 10 a.m. to 5 p.m. except on Saturdays, when they are closed at 2 p.m.

2. Every Fellow, whose subscription is not in arrear, is entitled to consult books and to use the Reading Room. Persons who are non-Fellows may be allowed to use the Library and Reading Room for a definite period on presentation to the Librarian of an introduction by a Member of Council. All cases in which temporary permission has been granted to non-Fellows shall be reported to the Library Committee at its next meeting. No books may be borrowed except by Fellows.

3. Fellows may borrow books from the Library on personal application, or by letter addressed to the Assistant Secretary or Librarian, all expenses for carriage being paid by them.

4. No Fellow may have more than ten volumes out at any one time or keep any book longer than one month. except by special authority from the Chairman of the Library Committee or an Honorary Secretary.

5. Cyclopædias, books of reference, and unbound scientific journals and periodicals may be borrowed only on the written order of an Honorary Secretary for a period not exceeding *four days.* If books so lent be not returned within the specified time, the borrower shall incur a fine of one shilling per day per volume for each day they are detained beyond the time specified.

6. Any Fellow who damages or loses a book, shall either replace the work or pay a fine equivalent to its value.

7. Readers are not themselves to replace books taken from the shelves, but to lay them on the Library table.

8. Any infringement of these regulations will involve the suspension of the right to the use of the Library, and shall be reported to the Library Committee at its next meeting.

DONORS TO THE LIBRARY.

DURING THE YEAR (ENDING 15TH SEPTEMBER) 1909.

(a) **Foreign Countries.**

Argentine Republic—
General Statistical Bureau.
Ministry of Agriculture.
Buenos Ayres. Provincial and Municipal Statistical Bureaus.
Cordoba. Municipal Statistical Bureau.
Santa Fé. Statistical Bureau.
Banco Español de Rio de la Plata, London Manager.

Austria-Hungary—
Central Statistical Commission.
Commission for Customs Values.
Ministry of Agriculture.
„ Finance.
„ Public Works.
„ Railways.
Statistical Department of the Ministry of Commerce.
Austrian Labour Department.
Hungarian Statistical Bureau.
Bohemia. Statistical Bureau.
Bosnia and Herzegovina. Statistical Bureau.
Bukowina. Statistical Bureau.
Vienna. Statistical Bureau.
Brünn. Statistical Bureau.
Budapest. Statistical Bureau.
Prague. Statistical Bureau.
"Compass," The Editor.
"Das Neue Europa," The Publishers.

Belgium—
Administration of Mines.
Army Medical Department.
Bureau of General Statistics.
Labour Department.
Ministry of Agriculture.
Ministry of Finance.

Belgium—contd.
Belgian Legation, London.
Bruges. The Burgomaster.
Brussels. Bureau of Hygiene.
Hasselt. The Burgomaster.
Royal Academy of Sciences.
Institute of Sociology.

Brazil—
Statistical Bureau.
"Brazilian Review," The Editor.

Bulgaria. Statistical Bureau.

Chile—
The Central Statistical Bureau.
Superintendent of Customs.

China. Imperial Maritime Customs.

Cuba—
"Secretaria de Hacienda."
National Library of Cuba.
Chamber of Commerce.

Denmark—
State Statistical Bureau.
Copenhagen. Statistical Bureau.
Political Economy Society.

Dominica. The Statistical Bureau.

Egypt—
Department of Public Health.
Director-General of Customs.
„ Post Office.
Statistical Department, Ministry of Finance.
Comité de Conservation des Monuments de l'Art Arabe.
Public Debt Office.

During the Year 1908-09—*Contd.*

(a) **Foreign Countries**—*Contd.*

France—
- Director-General of Customs.
- Director of the Mint.
- Labour Department.
- Colonial Office.
- Ministry of Agriculture.
- ,, Finance.
- ,, Justice.
- ,, Public Works.
- *Paris*—
  - The British Chamber of Commerce.
  - Statistical Bureau.
- Economiste Français, The Editor.
- Journal des Economistes, The Editor.
- Monde Economique, The Editor.
- Polybiblion, Revue Bibliographique Universelle, The Editor.
- Réforme Sociale, The Editor.
- Rentier, Le, The Editor.
- Revue d'Economie Politique, The Editor.
- Revue de Statistique, The Publisher.
- La Vie Financière, The Editor.
- The Bank of France.
- Statistical Society of Paris.

Germany—
- Imperial Health Bureau.
- ,, Insurance Bureau.
- ,, Judicial Bureau.
- ,, Statistical Bureau.
- German Consul-General, London.
- German Labour Department.
- *Prussia*. Royal Statistical Bureau.
- *Saxony*. Royal Statistical Bureau.
- *Alsace-Lorraine*. Statistical Bureau.
- *Aix-la-Chapelle*. Statistical Bureau.
- *Berlin*. Statistical Bureau.
- *Bremen*. Statistical Bureau.

Germany—*Contd.*
- *Dresden*. Statistical Bureau.
- *Dusseldorf*. Statisticcal Bureau.
- *Frankfurt*—
  - Actienbaugesellschaft.
  - Chamber of Commerce.
  - Statistical Bureau.
- *Hamburg*. Statistical Bureau.
- *Munich*. Statistical Bureau.
- *Wiesbaden*. Statistical Bureau.
- Allgemeines Statistisches Archiv, The Editor.
- Archiv für Rassen- und Gesellschafts-Biologie, The Editor.
- Archiv für Soziale-wissenschaft und Sozialpolitik, &c., The Editor.
- Deutsches Statistisches Zentralblatt, The Editor.
- Jahrbuch für Gesetzgebung, &c., The Editor.
- Jahrbücher für Nationalökonomie und Statistik, The Editor.
- Zeitschrift für die gesamte Staatswissenschaft, The Editor.
- Zeitschrift für Socialwissenschaft, The Editor.
- Geographical and Statistical Society of Frankfurt.
- Verein für Versicherungs-Wissenschaft.

Greece—
- The Ministry of Finance.
- Statistical Bureau.

Italy—
- Commissioner of Emigration.
- Director-General of Agriculture.
- ,, Customs.
- ,, Public Health.
- ,, Statistics.
- Labour Department.
- Ministry of Foreign Affairs.
- ,, Finance.

During the Year 1908-09—*Contd.*

(a) **Foreign Countries**—*Contd.*

Italy—Contd.
  Florence. Statistical Bureau.
  Turin. Statistical Bureau.
  Economista, The Editor.
  Giornale degli Economisti, The Editor.
  Riforma Sociale, The Editor.
  Rivista Italiana di Sociologia, The Editor.
  Società Umanitaria.

Japan—
  Consul-General, London.
  Bureau of General Statistics.
  Department of Agriculture and Commerce.
  Department of Finance.
  Japanese Financial Commission.
  Liberal News Agency, Tokyo.

Mexico. Statistical Bureau.

Netherlands—
  Central Health Bureau.
  ,, Statistical Bureau.
  Ministry of Finance.
  ,, Interior.
  ,, Agriculture.
  Director-General of Customs.

Nicaragua. Director-General of Statistics.

Norway—
  Central Statistical Bureau.
  Christiania—
    Health Department.
    Statistical Bureau.

Paraguay. Statistical Bureau.

Portugal. General Statistical Bureau.

Roumania—
  Ministry of Agriculture.
  ,, Finance.

Roumania—Contd.
  Ministry of Industry and Commerce.
  Statistical Bureau.
  Bucharest. Statistical Bureau.

Russia—
  Central Statistical Commission.
  Controller of the Empire.
  Customs Statistical Bureau.
  Imperial Financial Agency.
  Ministry of Agriculture.
  ,, Finance.
  ,, Justice.
  Finland—
    Statistical Bureau.
    Geographical Society.
  St. Petersburg. Statistical Bureau.
  Moscow. Statistical Bureau.
  Kazan. The University.
  Promyshlennost (Industry), The Editor.

Salvador—
  Board of Health.
  Statistical Bureau.

Servia. Statistical Bureau.

Spain—
  Director-General of Customs.
  Geographical and Statistical Institute.
  Ministry of War.
  Madrid. Statistical Bureau.

Sweden—
  Central Statistical Bureau.
  Royal Commission on Statistics.
  Labour Department.
  Royal Academy of Agriculture.
  Stockholm—
    Health Department.
    Statistical Bureau.
  Upsala. Royal University.

Switzerland—
  Federal Assurance Bureau.

During the Year 1908-09—*Contd.*

(a) **Foreign Countries**—*Contd.*

Switzerland—Contd.

Federal Statistical Bureau.
" Department of Customs.
Régie fédérale des Alcools.
Statistical Society of Switzerland.
Swiss Union of Commerce and Industry.

Turkey. Director-General of Indirect Taxation.

United States—

Bureau of Census.
" Education.
" Immigration.
" Manufactures.
" the Mint.
" Navigation.
Carnegie Foundation.
Comptroller of the Currency.
Department of Agriculture.
" Commerce and Labour.
Director of Geological Survey.
Interstate Commerce Commission.
Librarian of Congress.
Naval Observatory.
Secretary of the Treasury.
California—
Bureau of Labor Statistics.
State Board of Health.
University of California.
Connecticut—
State Board of Health.
Bureau of Labor Statistics.
Illinois—
Bureau of Labor Statistics.
University.
Indiana. Department of Statistics.
Iowa. Bureau of Labor Statistics.
Kansas. Bureau of Labor Statistics.

United States—Contd.

Maine. Bureau of Labor and Industrial Satistics.
Maryland. Bureau of Statistics and Information.
Massachusetts—
Board of Arbitration.
" Health, Lunacy, &c.
Bureau of Labor Statistics.
Michigan—
Bureau of Labor Statistics.
Division of Vital Statistics.
Minnesota. Bureau of Labor Statistics.
Missouri. Bureau of Labor Statistics.
Nebraska. State Bureau of Statistics.
New Hampshire. Bureau of Labor Statistics.
New Jersey. Bureau of Labor Statistics.
New York. State Library.
" Department of Labor.
" State University.
North Carolina. Bureau of Labor Statistics.
Ohio. Bureau of Labor Statistics.
Pennsylvania. Bureau of Industrial Statistics.
Wisconsin—
Bureau of Labor Statistics.
State Board of Health.
Boston—
Metropolitan Water and Sewerage Board.
Statistical Bureau.
Chicago—
Board of Trade.
University of Chicago Press.
New York City—
Public Library.
Tenement House Department.

During the Year 1908-09—*Contd.*

(a) **Foreign Countries**—*Contd.*

United States—Contd.

Bankers' Magazine, The Editor.
Bradstreet's Journal, The Editor.
Commercial and Financial Chronicle, The Editor.
Commercial America, The Editor.
Journal of Political Economy, The Editor.
Mineral Industry, The Editors.
Political Science Quarterly, The Editor.
Quarterly Journal of Economics, The Editor.
Yale Review, The Editor.
Actuarial Society of America.
American Academy of Political and Social Science.
American Economic Association.
American Geographical Society.
American Philosophical Society.
American Statistical Association.
Columbia University, New York.
Commercial Museum, Philadelphia.
John Crerar Library.

United States—Contd.

Johns Hopkins University.
Smithsonian Institution.

Uruguay—

Statistical Bureau.
Montevideo. Statistical Bureau.

Venezuela. Statistical Bureau.

International—

International Congress on School Hygiene.
International Bureau of American Republics.
International Co-operative Alliance.
International Conference of Cotton Growers, &c.
International Congress on Tuberculosis.
International Statistical Institute.
L'Economiste International, The Editor.
Revue Economique International, The Publisher.

(b) **India, and Colonial Possessions.**

India, British—

Secretary of State in Council.
Chief Inspector of Mines.
Director-General of Commercial Intelligence.
Director-General of Education.
Lieutenant-Governor of Bengal.
Bengal, The Collector of Customs.
Calcutta. Custom House.
Sanitary Commission for Punjab.
East India Railway Co.
Indian Engineering, The Editor.

Australia, Commonwealth of—

The Commonwealth Statistician.
Officer representing the Commonwealth, London.

Canada—

The Auditor-General.
Census Commissioner.
Clerk of House of Commons.
Commissioner of Customs.
Minister of Labour.
Department of Agriculture.
Deputy Minister of Finance.
Finance Department.
Alberta. The Provincial Government.
British Columbia—
  Mining Record, The Editor.
  Department of Mines.
Ontario—
  Bureau of Industries.
  Department of Agriculture.

During the Year 1908-09—*Contd.*

(b) **India, and Colonial Possessions**—*Contd.*

Canada—Contd.
  Manitoba—
    The King's Printer.
  Saskatchewan. Department of Agriculture.
  Royal Society of Canada.
  Royal Bank of Canada.

Cape of Good Hope—
  Agent-General for the Cape.
  Colonial Secretary.

Ceylon—
  Ceylon Government.
  General Manager of Government Railways.

Jamaica. Registrar-General.

Mauritius—
  The Colonial Secretary.
  The Royal Alfred Observatory.

Natal—
  Agent-General. London.
  The Colonial Secretary.

New South Wales—
  Bureau of Statistics.
  Agent-General, London.
  Chief Accountant, Railway Department.
  Controller-General of Prisons.
  Registrar-General.
  Registrar of Friendly Societies.
  Railway Commissioners, Sydney.

New Zealand—
  Registrar-General.
  Registrar of Friendly Societies.
  Insurance Department.
  Old Age Pension Department.
  Labour Department.
  New Zealand Institute.
  Trade Review, The Editor.
  Wellington. Harbour Board.

Queensland—
  Agent-General, London.

Queensland—Contd.
  The Government Statistician.

Rhodesia—
  British South Africa Company.
  Chamber of Mines.

South Africa. South African Customs Statistical Bureau.

South Australia—
  The Chief Secretary.
  Government Statist.
  Public Actuary.
  Public Library.

Straits Settlements. The Government Secretary, Perak.

Tasmania—
  The Agent-General London.
  Government Railways Department.
  Government Statistician.
  Royal Society of Tasmania.

Transvaal—
  Agricultural Department.
  Department of Mines.
  Government Mining Engineer.
  Johannesburg—
    Chamber of Mines.
    Chamber of Commerce.
    Chamber of Trade.
  Pretoria. Chamber of Commerce.

Victoria—
  Agent-General, London.
  Government Statistician.
  Registrar for Friendly Societies.
  Public Library, &c., Melbourne.

Western Australia—
  Agent-General, London.
  The Government Actuary.
  Department of Mines.
  Registrar of Friendly Societies.
  Registrar-General and Government Statistician

During the Year 1908-09—*Contd.*

(c) United Kingdom and its several Divisions.

United Kingdom—

Admiralty Medical Department.
Army Medical Department.
Board of Agriculture and Fisheries
Board of Trade.
  „ Labour Department.
  „ Commercial Depart.
  „ Marine Department.
  „ Railway Depart.
British Museum.
Chancellor of the Exchequer.
Colonial Office.
Companies in Liquidation, Inspector-General.
Customs, Commissioners.
Ecclesiastical Commissioners.
Factories and Workshops, Chief Inspector.
Friendly Societies, Chief Registrar.
Home Office.
House of Lords, The Librarian.
India Office.
Inland Revenue, The Commissioners.
Inspector-General in Bankruptcy.
Joint Stock Companies, The Registrar.
Local Government Board.
Royal Commission on Poor Laws, The Secretary.
Royal Mint.
War Office.
Woods, Forests, &c., Commissioners.
Tariff Commission.

England—

Registrar-General of England.
London County Council.
  „ County Council Education Committee.
London University.
Metropolitan Asylums Board.
  „ Water „

England—Contd.

City and Guilds Institute, The Superintendent.
Acton Urban District Council, The Accountant.
Battersea Metropolitan Borough, The Town Clerk.
Wandsworth Borough Council.
Birmingham City Treasurer.
Folkestone, Borough Accountant.
Ipswich, Borough Accountant.
Leicester, Borough Treasurer.
Manchester, City Treasurer.
Mersey Conservancy.
Nottingham, City Accountant.
Paddington Medical Officer of Health.
Poplar Medical Officer of Health.
Tunbridge Wells, The Borough Accountant.
West Hartlepool, The Borough Accountant.
The Medical Officers of Health of the Local Government Board and of the following towns: Birkenhead, Birmingham, Blackburn, Bradford, Bristol, Cardiff, Derby, Halifax, Huddersfield, Leicester, Liverpool, Manchester, Newcastle-on-Tyne, Norwich, Nottingham, Preston, West Hartlepool, Wigan, Wolverhampton.

Ireland—

Department of Agriculture.
Registrar-General of Ireland.

Scotland—

Education Department.
Registrar-General of Scotland.
Edinburgh City Chamberlain.
Aberdeen Medical Officer.
  „ Sanitary Inspector.
Glasgow Medical Officer.

During the Year 1908-09—*Contd.*

(d) **Authors, Publishers, &c.**

Alcan, Felix.
Andersson, Dr. Thor.
Angier Brothers.
Bamber, Lieut.-Col. C. J.
Barnes, William, Sr.
Bell, George, & Son.
Bellom, Maurice.
Berger-Levrault & Co.
Bertillon, Dr. J.
Black, A. & C.
Blackwood & Sons.
Blount, Bertram.
Booth, Rt. Hon. Charles, D.C.L.
Boutcher, Mortimore, & Co.
Bowes & Bowes.
Bright, Charles, F.R.S.E.
Broomhall, G. J. S.
Buckley, T. J. W.
Burbury, S. H.
Bygate, W.
Ciccotti, Ettore.
Clarendon Press.
Coghlan, Hon. T. A., I.S.O.
Colin, Librairie Armand.
Collie, Dr. R. J.
Constable, A., & Co.
Cooper, Joseph.
Co-partnership Tenants, Ltd.
Cornély, M., & Co.
Cox, Horace.
Craigie, Major, C.B.
Crosby, Lockwood, & Son.
Darbishire, A. D.
Deane, Albert B., F.C.I.S.
De Bussy, J. H.
Dick, G. W.
Doin & Fils, O.
Dondlinger, Peter Tray, Ph.D.
Dudfield, Dr. R., M.A.
Dun & Co.
Duncker & Humblot.
Eaton, H. W., & Sons.
Edgeworth, Professor F. Y., M.A.
Ellison & Co.
Engelbrecht, Th. H.
Engelmann, Wilhelm.
Erhardt, W.
Ferraris, Carlo F.
Figgis, S., & Co.
Fischer, Gustav.
Fisher, Professor Irving.
Foot, Alfred.
Fratelli, Bocca.
Gaedeken, Paul.
Gee & Co.
Giard & Brière.
Gibson, A. H.
Gini, Corrado.
Gow, Wilson, & Stanton.
Guillaumin et Cie.
Guyot, Yves.
Haensel, Dr. Paul.
Harman, Edward A.
Helmuth Schwartze & Co.
Henry, Charles.
Hoffman, F. L.
Hooper, E. Grant.
Hopkins, J. Castell.
Hore, C. F. Adair.
Iles, George.
Jackson, J.
Jacob, Joseph.
Jacquart, Camille.
Jay, E. A. H.
Jevons, H. Stanley, M.A.
Johns Hopkins Press.
Johnson, Riddle, & Co., Ltd.
Johnston, R. M.
Juraschek, Dr. F. v.
Kegan Paul & Co.
Keltie, J. Scott.
King, A. W. W.
King. P. S., & Son.
Kirkham-Hogbin, P. J.
Klinkhardt, Dr. Werner.
Kohlhammer, W.
Larose & Tenin.
Latham, Baldwin.

During the Year 1908-09—*Contd.*

(d) **Authors, &c.**—*Contd.*

Layton, C. & E.
Leake, P. D.
Leroy-Beaulieu, Paul.
Levasseur, E.
Lewis, Robert.
Librairie Chaix.
Lloyd's Register.
Longmans & Co.
Macdonald, Arthur.
Macdonald & Evans.
Macmillan & Co.
Magnus, Sir Philip, M.P.
Mallet, Bernard.
March, Lucien.
Marr, Vyvyan.
Mayländer, M. G.
Mayr, Dr. G. von.
McCorquodale & Co.
Mitchell & Co.
Morgan, Ben H.
Morgan, P. C.
Mortara, Giorgia.
Mourlon, M.
Murby & Co.
Murray, John.
Newsholme, Dr. A.
Neymarck, A.
Oxford University Press.
Paish, George.
Pearson, Prof. Karl, F.R.S.
Petersilie, Dr. A.
Phelps, E. B., M.A.
Pitman, Sir Isaac, & Sons.
Pixley & Abell.
Powell, T. J., & Co.
Prato, Giuseppe.
Pugliese, Salvatore.
Putnam, G. P., & Sons.
Raffalovich, Arthur.
Raineri, Salvatore.
Reinhardt, E.
Renwick, Mr. I. P. A.
Rew, R. H.
Roger, P., & Co.
Ronald & Rodger.
Rosenbaum, S., M.Sc.
Rousseau, Arthur.
Rowntree, Joseph.
Rozenraad, C.
Rutter, F. R.
Samuels, G. A. H.
Scheitlin, Spring & Co.
Schmidt, Arno.
Schmoller, Dr. G.
Schooling, J. Holt.
Schuurmann, W. Elink.
Scott, W. R.
Segar, H. W.
Seyd, Richard E.
Sherratt & Hughes.
Sherwell, Arthur, M.P.
Shvittau, George.
Siebanhaar, W.
Silver, Burdett, & Co.
Simon, André L.
Smith, Dr. George, C.I.E.
Smith, Elder, & Co.
Smith, Sir H. Llewellyn, K.C.B.
Societa Editrice Libraria.
Societa Tipografica-Editrice Nazione.
Stevenson, Dr. T. H. C.
Streeter, Rev. T. E.
Stuart, C. A. Verrijn.
Sundbårg, Gustav.
Swan, Sonnenschein & Co.
Tattersall, William.
Thompson, R. J.
Thompson, W. J., & Co.
Timewell, James.
Trübner, M. Karl J.
Urmson, Elliot, & Co.
Vivian, Younger & Bond.
Wallis, Percy.
Weddel & Co.
Whitehead, H. C.
Whitelegge, B. Arthur, C.B., M.D.
Williams, Ernest E.
Wilson, Effingham.
Wilson, Prof. E. B.

During the Year 1908-09—*Contd.*

(d) **Authors, &c.**—*Contd.*

Wohlin, N.
Wolfe, S. H.
Yanagisawa, Count
Yule, G. Udny.

(e) **Societies, &c. (British).**

Accountants and Auditors, Society of.
Actuaries, Institute of.
Agricultural and Horticultural Association, Ltd.
Anthropological Institute.
Arts, Royal Society of.
Bankers, Institute of.
Board of Guardians for Relief of Jewish Poor.
Bradford Chamber of Commerce.
British Association.
,, Iron Trade Association.
Cambridge University Press.
Central Association of Accountants.
Charity Organisation Society.
Chartered Accountants, Institute of.
Chemical Society.
Civil Engineers, Institution of.
Cobden Club.
Co-operative Union, Ltd.
Corporation of Foreign Bondholders.
Council of the United Synagogue.
East India Association.
Francis Galton Laboratory.
Glasgow Royal Philosophical Society.
Howard Association.
Imperial Institute.
Incorporated Accountants' Society.
Institute of Chemistry.
Iron and Steel Institute.
Liverpool Chamber of Commerce.
London Chamber of Commerce.
,, School of Economics.
Manchester Statistical Society.
Medical Officers of Health, (Incorporated Society of.
Middlesex Hospital.
Navy League.
Peabody Donation Fund.
Peace Society.
Reform Club, Library Committee.
Royal Agricultural Society.
,, Asiatic Society.
,, College of Physicians.
,, ,, Surgeons.
,, Colonial Institute.
,, Economic Society.
,, Geographical Society.
,, Institution of Great Britain.
,, Meteorological Society.
,, Society, Edinburgh.
,, ,, London.
,, United Service Institution.
St. Bartholomew's Hospital.
Sanitary Institute of Great Britain.
Society of Comparative Legislation.
,, for Propagation of the Gospel in Foreign Parts.
Sociological Society.
Statistical and Social Inquiry Society of Ireland.
Stock Exchange.
Surveyors' Institution.
University College, London.

During the Year 1908-09—*Contd.*

(f) Periodicals, &c. (British). *The Editors of—*

- Accountant, The.
- Agricultural Economist.
- Associated Accountants' Journal.
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- Bankers' Magazine, The.
- Bradshaw's Railway Manual.
- Broomhall's Weekly Corn Trade News.
- Browne's Export List.
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- Commercial Intelligence.
- Commercial World, The.
- Economic Review, The.
- Economist, The.
- Finance Chronicle, The.
- Financial Review of Reviews.
- Financier The.
- Fireman, The.
- Illuminating Engineer.
- Insurance Post, The.
- Insurance Record, The.
- Investors' Monthly Manual, The.
- Joint Stock Companies Journal.
- Labour Co-partnership.
- Licensing World, The.
- Machinery Market, The.
- Nature.
- Policy-Holder, The.
- Post Magazine, The.
- Public Health.
- Sanitary Record, The.
- Shipping World, The.
- South Wales Coal Annual
- Statesman's Year-book.
- Statist, The.
- To and Fro.

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